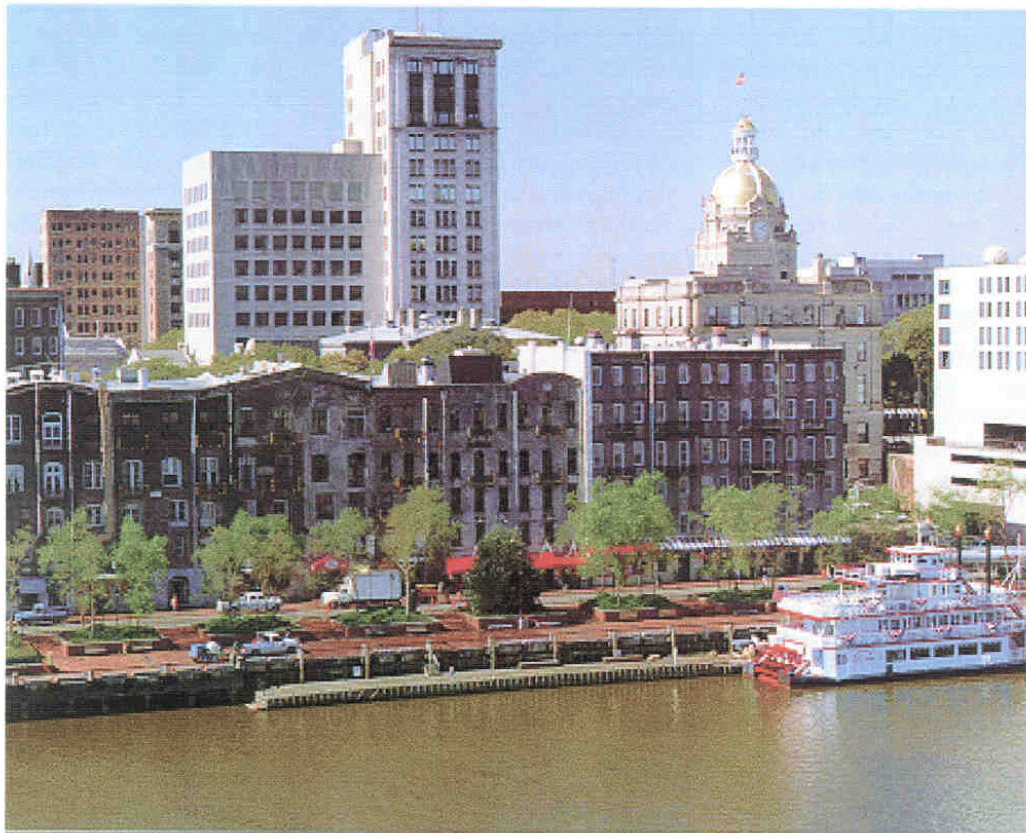


City Of Savannah

WATER AND SEWER BUREAU

CROSS-CONNECTION

CONTROL POLICY



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WATER AND SEWER BUREAU

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INTRODUCTION

The Georgia Environmental Protection Division of the Department of Natural Resources (EPD-DNR) defines Cross-Connection as any physical arrangement whereby a public water system is or may be connected directly or indirectly with a non-potable water system or non-permitted water system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, liquid, gasses, sewage or other waste of unknown or unsafe quality, which may be capable of imparting contamination to the public water system as the results of backflow, bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary, permanent or potential connections through which or because of which back-flow or backsiphonage could or would occur.

The Rules and Regulations for Safe Drinking Water, Chapter 391-3-5-13, also mandates that:

- 1) A supplier of water or any person having possession or control of facilities which may cause the contamination of a public water system has the responsibility to prevent water from unapproved sources or any contaminants from entering the public water system by such physical arrangements cited in paragraph (1) of this rule.
- 2) Any person connecting to and purchasing water from a public water system and reselling it to others is considered a supplier of the water so purchased as well as a consumer, and is also responsible for the quality of such water.
- 3) A supplier shall, when requested by the Division, develop a control program for the elimination and prevention of all cross-connections. A written plan for the program shall be submitted to the Division for review and approval within two years or less in accordance with a written request by the Division. When the plan is approved, the owner shall implement the program immediately.
- 4) The procedures for back-flow and backsiphonage prevention and cross-connection control shall conform to those recommended by the American Water Works Association, Manual 14, and the U.S. Environmental Protection Agency Cross-Connection Manual.

Based on the increased number of incidents of contamination of public water supply systems in Georgia by cross-connections and the increased hazards to the public health, it was apparent to EPD-DNR that a number of public water systems need a more effective Cross-Connection Control Program. Therefore, in March of 1983, EPD-DNR requested all municipal systems in Georgia to prepare a Cross-Connection Control Program to eliminate and prevent cross-connections for public water systems. The Plan for the Savannah Water Supply has been approved by EPD-DNR in 1984 and immediate implementation of the Program was mandated.

In compliance with this State mandate, the following is the City of Savannah, Water and Sewer Bureau's Policy on Cross-Connections.

The Policy's objective is to prevent the contamination of the public water supply. A concerted effort by both water purveyors and customers is required to meet this objective. The Water and Sewer Bureau stands behind this Policy and its enforcement and will offer whatever assistance to all who share the responsibilities of providing safe water.

I. OVERVIEW

1.1 OBJECTIVE

The objective of the Cross-Connection Control Policy is to protect the Savannah Municipal Supply from contamination.

As water purveyors, the City of Savannah Water and Sewer Bureau must plan and diligently execute a program of cross-connection control which either eliminates all cross-connections or requires the installation and maintenance of a proper type of approved backflow prevention device at the water service connection whenever a potential hazard is determined to exist in the customer system.

The Water and Sewer Bureau's Policy on cross-connections does not preclude any inspections or requirements that may be the responsibility of the City of Savannah Plumbing Inspections Department. The Inspections Department will continue to execute the existing program to inspect and prevent plumbing type cross-connection within the establishment.

As mandated by State Law, the City of Savannah Water and Sewer Bureau will prevent the backflow of contaminants into the public water supply by containing the potential contaminant at the service connection. This Policy of containment is necessary due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., which require changes in water requirements. As a result, new cross-connections may be installed and existing internal protection may be by-passed, removed, or otherwise become inefficient. Therefore, containment of the system at the service connection provides continual protection regardless of any water line modification within the establishment.

1.2 CAUSES OF BACKFLOW

The causes of backflow cannot usually be eliminated completely since backflow is often initiated by accidents or unexpected circumstances. However, some causes of backflow can be partially controlled by good design and informed maintenance. Listed below are the major causes of backflow as outlined under the two types of backflow - backsiphonage and backpressure.

- A) **BACKSIPHONAGE** - Backsiphonage is caused by reduced or negative pressure being created in the supply piping. The principal causes of backsiphonage are:
- 1) Line repair or break which is lower than a service point. This will allow negative pressures to be created by water trying to flow to a lower point in the system.
 - 2) Undersized piping if water is withdrawn from a pipe at a very high velocity, the pressure in the pipe is reduced and the pressure differential created can cause water to flow into the pipe from a contaminated source.
 - 3) Lowered pressure in water main due to high water withdrawal rate such as fire fighting, water main flushing, or water main breaks.
 - 4) Reduced supply main pressure on suction side of a booster pump.
- B) **BACKPRESSURE** - Backpressure may cause backflow to occur where a potable water system is connected to a non-potable system of piping, and the pressure in the non-potable system exceeds that in the potable system. The principal causes of back pressure are:
- 1) Booster pump systems designed without backflow prevention devices.
 - 2) Potable water connections to boilers and other pressure systems without backflow prevention devices.
 - 3) Connections with another system which may, at times, have a higher pressure.
 - 4) Water stored in tanks or plumbing systems which by virtue of their elevation would create head sufficient to cause backflow if pressure were lowered in the public system.

II. RESPONSIBILITY

2.1 CROSS-CONNECTION PROGRAM

The responsibilities of the City's Cross-Connection Control Program in accordance with Georgia State Law, Chapter 391-3-5-13 are as follows:

- 1) As water purveyors, to protect the City of Savannah Public Water Supply from the possibility of contamination by containing within its consumers' private water systems, contaminants or pollutants which could, under adverse conditions, backflow through uncontrolled cross-connections into the public water system.
- 2) As plumbing inspectors, to eliminate, control, and isolate existing cross-connections, actual or potential, between the consumer's in-plant potable water system(s) and non-potable system(s) plumbing fixtures, and industrial piping systems.
- 3) As both water purveyors and plumbing inspectors, to provide a continuing inspection program of cross-connection control, which will systematically and effectively control all actual or potential cross-connections which may be installed in the future.

2.2 CUSTOMERS

Any person having control or possession of water supply or distribution facilities which may cause the pollution or contamination of a public water system shall prevent water from unapproved sources or any pollutant or contamination from entering the public water system by such physical arrangements which may cause backflow.

If the Director determines that a pollutant or contaminant on the premises or property of the water customer constitutes a hazard to the public water system, the water customer must install a backflow prevention device approved by the City on all water lines entering the premises from the City water main. The type of backflow prevention device required will be determined by the nature of the customer's system and the degree of hazard it represents. This information may be ascertained by requiring that the questionnaire in Appendix I be completed. The installation must be completed according to City specifications and must be inspected by the City.

The customer's responsibility will start at the point of delivery from the public potable water system and includes all of his water systems. The customer, at his own expense, shall install, operate, test and maintain approved backflow prevention devices, as directed by the City of Savannah Water and Sewer Bureau. The customer shall maintain accurate records of tests and repairs made to backflow prevention devices and provide the Water and Sewer Bureau with copies of such records. The records shall be on forms approved or provided by the Bureau. In the event of accidental pollution or contamination of the public or consumer's potable water system due to backflow on or from customer's premises, the owner shall promptly take steps to confine further spread of pollution or contamination within the customer's premises, and shall immediately notify the Water and Sewer Bureau of the hazardous condition.

2.3 BACKFLOW PREVENTION DEVICE INSTALLERS

The installer's responsibility is to make proper installation of backflow prevention device assemblies in accordance with the manufacturer's installation instructions and any additional instructions approved by the City of Savannah Water and Sewer Bureau. The installer will also be responsible to ensure that the device is working properly when it is installed and will be required to furnish to the Water and Sewer Bureau's Cross-Connection Control Staff the following information:

- 1) Service address
- 2) Owners name
- 3) Type of device and size
- 4) Description of location
- 5) Date of installation
- 6) Manufacturer
- 7) Model number
- 8) Serial number
- 9) Generic names of contaminant or pollutant used on premises
- 10) Completed copy of test report (page A8) by a certified tester

All Reduce Pressure Zone (RPZ), Double-Check Assembly (DCA), and Pressure Vacuum Breaker (PVB) will be required to be tested following installation by a certified Backflow Prevention Device Technician approved by the City.

III. INSPECTIONS

3.1 FREQUENCY

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. As a result, new cross-connections may be installed and existing protection may be by-passed, removed, or otherwise be made ineffective; therefore, an annual or biennial detailed inspection by the customer of all water usage is required.

3.2 PROPOSED CONSTRUCTIONS

All new construction plans and specifications for industrial commercial facilities shall be reviewed by the City of Savannah Water and Sewer Bureau to determine the degree of possible cross-connections hazard. All commercial and industrial establishments will require backflow preventers. In addition, two story or more residential projects will also require backflow preventers. Other requirements will be made during the initial plan review.

3.3 NEW AND EXISTING FACILITIES

In order to determine the degree of hazard to the public potable water system, the questionnaire in Appendix I may be required to be completed by the owner or owner's representative. This questionnaire does not include a detailed inspection of the location or disposition of the water lines, but will provide information about the water uses on the premises, the existence of cross-connections, the availability of auxiliary or used water supplies and the degree of hazard that the customer's system presents. If additional information is needed, it shall be supplied to the City upon request. On site inspections are made of new and existing facilities and should any devices or plumbing changes be required, a follow-up inspection will be made of the same facilities at a later date.

3.4 RIGHT OF ENTRY

Whenever it shall be necessary for the purposes of compliance or enforcement of this Policy, the City through its authorized representative, may enter upon any property or premises at reasonable times for the purpose of: 1) copying any records required to be kept under the provisions of this Policy, 2) inspecting any equipment or water lines or 3) sampling of any water suspected of any cross-connection. The City may enter upon the property at any hour under emergency circumstances to perform any inspection or investigation required to enforce this Policy.

3.5 INSPECTION AND TESTING

Annually the City will inspect the water customer's backflow prevention device for compliance and local ordinances. The customer shall maintain accurate records of tests and repairs made to backflow prevention devices and copies must be made available to the City within 12-months from date of installation. All records will be reviewed during the annual inspection. All records shall be on forms approved by the City. Following any repair, overhaul, re-piping, or relocation of the device, the customer shall have the device tested to insure that it is in good working condition and will prevent backflow. However, this testing may be more often in those instances where successive inspections indicate repeated failure to properly repair and maintain such device or devices, and to keep adequate records of each test and subsequent maintenance and repair, including materials or replacement parts.

IV. DEFINITIONS

4.1 AIR-GAP SEPARATION

The term "air-gap separation" shall mean a physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An "approved air-gap separation" shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel - in no case less than one inch.

4.2 APPROVED

- a. The term "approved" as herein used in reference to a water supply shall mean a water supply that has been approved by the health agency having jurisdiction.
- b. The term "approved" as herein used in reference to air-gap separation, a double check valve assembly, a reduced pressure principle backflow prevention device or other backflow prevention devices or methods shall mean an approval by the regulatory agency having jurisdiction.

4.3 ATMOSPHERIC VACUUM BREAKER

The term "atmospheric vacuum breaker" (also known as the non-pressure type vacuum breaker) shall mean a device containing a shut-off valve followed by a valve body containing a float check, a check seat and an air inlet port. When the shut-off valve is open the flow of water causes the float to close the air inlet port. When the shut-off valve is closed the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port.

4.4 BACKFLOW

The term "backflow" shall mean the undesirable reversal of the flow of water or mixtures of water and other liquids, gases or other substances into the distribution pipes of the potable supply of water from any source or sources.

4.5 BACKFLOW PREVENTION DEVICE - APPROVED

The term "approved backflow prevention device" shall mean a device that has been investigated and approved by the regulatory agency having jurisdiction. The approval of backflow prevention devices by the regulatory agency should be on the basis of a favorable laboratory and field evaluation report by an approved testing laboratory recommending such approval.

4.6 BACKFLOW PREVENTION DEVICE - TYPE

A "backflow prevention device" shall mean any effective device used to prevent backflow into a potable water system. The type of device used should be based on the degree of hazard either existing or potential. The types are:

- a. Air Gap
- b. Double Check Valve Assembly
- c. Pressure Vacuum Breaker
- d. Reduced Pressure Zone Assembly
- e. Atmospheric (non-pressure) Vacuum Breaker

4.7 BACKFLOW PREVENTION DEVICE TESTER - CERTIFIED

The term "certified backflow prevention device tester" shall mean a person who has proven his competency to the satisfaction of the regulatory agency having jurisdiction. Each person who is certified to make competent tests or to repair, overhaul and make reports on backflow prevention devices shall be conversant with applicable laws, rules and regulations and have had experience in plumbing or pipe fitting or have other qualifications which, in the opinion of the regulatory agency having jurisdiction are equivalent.

4.8 BACKPRESSURE

"Backpressure" shall mean any elevation of pressure in the downstream piping system (by pump, elevation of piping, or stream and/or air pressure) above the supply pressure at the point of consideration which would cause - or tend to cause - a reversal of the normal direction of flow through the backflow prevention assembly.

4.9 BACKSIPHONAGE

"Backsiphonage" shall mean a form of backflow due to a reduction in system pressure which causes a negative or sub-atmospheric pressure to exist at a site in the water system.

4.10 CHECK VALVE - APPROVED

The term "approved check valve" shall mean a check valve that is drip-tight in the normal direction of flow when the inlet pressure is at least one psi and the outlet pressure is zero. The check valve shall permit no leakage in a direction reverse to the normal flow. The closure element (e.g. clapper, poppet or other design) shall be internally weighted or otherwise internally loaded to promote rapid and positive closure. An approved check valve is only one component of an approved backflow prevention device - i.e. pressure vacuum breaker, double check valve assembly or reduced pressure principle device.

4.11 CONSUMER

The term "consumer" shall mean the owner or operator of a private water system having a service from a public potable water system.

4.12 CONTAMINATION

"Contamination" shall mean an impairment of the quality of the water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.

4.13 CROSS-CONNECTION

A "cross-connection" shall mean any unprotected actual or potential connection or structural arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which "backflow" can or may occur are considered to be cross-connections.

4.14 CONTAINMENT

The installation of a backflow preventer at each service connection to the premises to protect the public water supply.

4.15 CROSS-CONNECTION - POINT OF

The term "point of cross-connection" shall mean the specific point of location in a public or a consumer's potable water system where a cross-connection exists.

4.16 DOUBLE CHECK VALVE ASSEMBLY

The term "double check valve assembly" shall mean an assembly composed of two single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and fitted with properly located test cocks (see Specifications Section for additional details).

4.17 DOUBLE CHECK -DETECTOR CHECK VALVE ASSEMBLY

The term "double check-detector check valve assembly" shall mean a matched assembly of a line-size approved double check valve assembly with a by-pass 5/8 x 3/4 meter and an approved 3/4 inch double check valve assembly. The meter shall register accurately only for very low rates of flow and shall show a registration for all rates of flow.

4.18 HAZARD - DEGREE OF

The term "degree of hazard" shall be derived from the evaluation of a health, system, plumbing or pollutional hazard. The highest degree of hazard will also determine the type of backflow preventor used at each service connection, to the premises, to protect the public water supply.

4.19 HAZARD - HEALTH

The term "health hazard" shall mean an actual or potential threat of contamination of a physical or toxic nature to the public potable water system or the consumer's potable water system that would be a danger to health.

4.20 HAZARD - PLUMBING

The term "plumbing hazard" shall mean an internal or plumbing type cross-connection in a consumer's potable water system that may be either a pollutional or a contamination type hazard. This includes but is not limited to cross-connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Plumbing type cross-connections can be located in many types of structures including homes, apartment houses, hotels and commercial or industrial establishments. Such a connection, if permitted to exist, must be properly protected by an appropriate type of cross-connection control device.

4.21 HAZARD - POLLUTIONAL

The term "pollutional hazard" shall mean an actual or potential threat to the physical properties of the water system or the potability of the public or the consumer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree or intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

4.22 HAZARD - SYSTEM

The term "system hazard" shall mean an actual or potential threat of severe danger to the physical properties of the public or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

4.23 HEALTH AGENCY

The term "health agency" shall mean the health authority having jurisdiction.

4.24 HOSPITAL

The term "hospital" shall mean any institution, place, building, or agency which maintains and operates facilities for one or more persons for the diagnosis, care and treatment of human illness, including convalescence and care during and after pregnancy or which maintains and operates organized facilities for any such purpose, and to which persons may be admitted for overnight stay or longer. The term "hospital" includes sanitarium, nursing home and maternity home.

4.25 INDUSTRIAL FLUIDS

The term "industrial fluids" shall mean any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated used waters; all types of process waters and "used waters" originating from the public potable water system which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulated cooling waters connected to an open cooling tower and/or cooling waters that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other processes or for fire fighting purposes.

4.26 INDUSTRIAL PIPING SYSTEM - CONSUMER'S

The term "consumer's industrial piping system" shall mean any system used by the consumer for transmission of or to confine or store any fluid, solid or gaseous substance other than an approved water supply. Such a system would include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey or store substances which are or may be polluted or contaminated.

4.27 ISOLATION

The installation of a backflow preventer or a vacuum breaker at each cross-connection on the premises to protect both the premises and the public supply.

4.28 LABORATORY - APPROVED TESTING

Reference to an "approved testing laboratory" shall mean the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California or another laboratory having equivalent capabilities for both the laboratory and field evaluation of the devices.

4.29 POINT OF DELIVERY

(See "Service Connection".)

4.30 POLLUTION

The term "pollution" shall mean an impairment of the quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

4.31 PRESSURE VACUUM BREAKER

The term "pressure vacuum breaker," shall mean a device containing one or two independently operating loaded check valve(s) and an independently operating loaded air inlet valve located on the discharge side of the check or checks. The device is to be equipped with properly located testcocks and tightly closing shut-off valves located at each end of the assembly (see Specifications Section for additional details).

4.32 REDUCED PRESSURE ZONE BACKFLOW PREVENTION DEVICE

The term "reduced pressure principle backflow prevention device" shall mean a device containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located testcocks and tightly closing shut-off valves at each end of the assembly (see Specifications Section for additional details).

4.33 SERVICE CONNECTION

The term "service connection" shall mean the terminal end of a service connection from the public potable water system. i.e. where the water purveyor may lose jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter.

4.34 WATER - POTABLE

The term "potable water" shall mean water from any source which has been investigated by the health agency having jurisdiction, and which has been approved for human consumption.

4.35 WATER PURVEYOR

The term "water purveyor" shall mean the public or private owner or operator of the potable water system supplying an approved water supply to the public.

4.36 WATER SUPPLY - APPROVED

The term "approved water supply" shall mean any public potable water supply which has been investigated and approved by the State Department of Public Health or the local health agency having jurisdiction. The system must be operating under a valid health permit. In determining what constitutes an approved water supply, the State Department of Public Health has reserved final judgement as to its safety and potability.

4.37 WATER SUPPLY - AUXILIARY

The term "auxiliary water supply" shall mean any water supply on or available to the premises other than the purveyor's approved public potable water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source such as a well, spring, river, stream, harbor, etc., or "used water" or "industrial fluids". They may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

4.38 WATER SUPPLY - UNAPPROVED

The term "unapproved water supply" shall mean a water supply which has not been approved for human consumption by the health agency having jurisdiction.

4.39 WATER SYSTEM(S) - CONSUMER'S

The term "consumer's water system(s)" shall include any water system located on the consumer's premises whether supplied by a public potable water system or an auxiliary water supply. The system or systems may be either a potable water system or an industrial piping system.

4.40 WATER SYSTEM - CONSUMER'S POTABLE

The term "consumer's potable water system" shall mean that a portion of the privately owned potable water system lying between the point of delivery and the point of use. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store, or use potable water.

4.41 WATER SYSTEM - PUBLIC POTABLE

The term "public potable water system" shall mean any publically or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and the point of delivery such as valves, pumps, pipe conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, treat or store a potable water for public consumption or use.

4.42 WATER - USED

The term "used water" shall mean any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the service connection and/or fixture outlet and is no longer under the control of the water purveyor.

4.43 WATER SUPERVISOR

The term "water supervisor" shall mean the consumer or a person on the premises appointed by him charged with the responsibility of maintaining the consumer's water system(s) on the property free from cross-connections and other sanitary defects, as required by regulations and laws. A certified backflow prevention device tester may not act as a water supervisor unless he is a full-time employee of the consumer having the day-to-day responsibility for the installation and use of pipelines and equipment on the premises and for the avoidance of cross-connections.

V. TYPICAL FACILITIES, CROSS-CONNECTIONS OR WATER USES WHICH MAY ENDANGER THE PUBLIC WATER SYSTEM

The following conditions and problems should be reviewed in all cases where the regulatory agency adopts a policy of requiring that the "degree of hazard" be based on a complete inspection of the consumer's water-using facilities. For convenience, these conditions have been divided into three groups. Group I includes cross-connections typical to certain industries or uses. Group II includes potential cross-connections involving water-using fixtures, equipment, facilities, etc. grouped in associated categories. Group III lists chemicals and chemical compounds used in water treatment, hydraulically distributed in the consumer's water system or used in conjunction with water by industry. The following are intended to be representative but not all inclusive.

5.1 GROUP I INCLUDES CROSS-CONNECTIONS TYPICAL TO CERTAIN INDUSTRIES OR USES

Hazards normally to be found in connection with the operation of an average water system include:

5.1.1. SEWERAGE SYSTEMS

Cross-connections to sewage or surface water pumps for priming, cleaning, flushing or unclogging purposes.

Water-operated sewage sump ejectors for operational purposes.

Sewers for the purpose of disposing of filter or softener backwash water or water from cooling systems or for the purpose of providing for a quick drain for the building water lines or of flushing or blowing out obstructions in the sewer lines, etc. (NOTE: most State regulations require backflow protection at the service connection to any premises on which there is located a sewage or pumping station, even though there are no cross-connections.)

5.1.2. RESERVOIRS, COOLING, TOWERS, ETC.

Reservoirs, cooling towers, and circulating systems which may be heavily contaminated either with bird droppings, vermin, algae, bacterial slimes or with toxic water treatment compounds such as pentachlorophenol, copper, chromates, metallic glucosides, compounds of mercury, quaternary ammonium compounds, etc.

5.1.3. INDUSTRIAL FLUID SYSTEMS

Industrial fluid systems and lines containing cutting and hydraulic fluids, coolants, hydrocarbon products, glycerine, paraffin, caustic and acid solutions, etc.

5.1.4. FIRE FIGHTING SYSTEMS

Fire fighting systems, including storage reservoirs which may be treated for prevention of scale formation, corrosion, algae, slime growths, etc.

Fire systems which may be subject to contamination with anti-freeze solutions, "foamite" or other chemicals or chemical compounds used in fighting fire.

Fire systems which are subject to contamination with auxiliary or used water supplies or industrial fluids.

5.1.5. PLATING FACILITIES

Plating facilities involving the use of highly toxic cyanides, heavy metals in solution (such as copper, cadmium, chrome, nickel, etc.), acids and caustic solutions.

Plating solution filtering equipment with pumps and circulating lines.

Tanks, vats or other vessels used in painting, descaling, anodizing, cleaning, stripping, oxidizing, etching, passivating, pickling, dipping, rinsing operations.

Other lines or facilities needed in the preparation or finishing of the products.

5.1.6. STEAM GENERATING FACILITIES

Steam generating facilities and lines which may be contaminated with boiler compounds such as pentachlorophenol, hydrazine, cyclohexylamine, etc. (NOTE: very particular hazard is the possibility of steam getting back into the domestic system, causing either a system or a health hazard.)

5.1.7. PLUMBING HAZARDS

Inadequately protected (improperly installed, improperly maintained or without vacuum breakers) flush valve toilets, urinals, aspirators, retorts, pipet tube washers and similar contaminated and/or sewer connected facilities.

Laboratory equipment which may be chemically or bacteriologically contaminated such as steam sterilizers, autoclaves, specimen tanks, autopsy and mortuary equipment. (NOTE: These hazards are critical because little or no attention is given to the maintenance of the vacuum breaker often supplied with such equipment.)

5.1.8. COOLING SYSTEMS - SINGLE PASS

Compressors, heat exchangers, air-conditioning equipment and other water-cooled equipment which may be sewer-connected.

5.1.9 IRRIGATION SYSTEMS

Irrigation systems which may be equipped with pumps, injectors, pressurized tanks or vessels, or other facilities for injecting into the irrigation system agricultural chemicals such as fungicides, pesticides, soil conditioning and other similar noxious, toxic or objectional substances.

Irrigation systems subject to contamination from submerged inlets, auxiliary water supplies, ponds, reservoirs, swimming pools and other sources of stagnant, polluted or contaminated waters.

5.1.10 PLUMBING - HOSPITALS

Contaminated or sewer-connected equipment such as bed pan washers, flush valve toilets and urinals, autoclaves, specimen tanks, sterilizers, pipet tubewashers, cuspidors, aspirators, autopsy and mortuary equipment, etc. (NOTE: It has been found that in this type of facility little or no attention is given to the maintenance of air-gaps or vacuum breakers.)

5.1.11 PLUMBING - MULTI - STORIED BUILDINGS

Where the upper floors of multi-storied buildings are above the reach of the water purveyor's system pressure it will be necessary to use booster pumps. Considerable care must be exercised to prevent the use of the suction side line to these pumps from also being used as the take-off for domestic, sanitary, laboratory or industrial uses on the lower floors. Pollutants or contaminants from equipment supplied by take-offs from the suction side line may be easily pumped throughout the upper floors. Installations requiring a booster pump will be protected with a reduced pressure zone back flow preventer assembly. R.P.Z.

5.1.12 INDUSTRIAL SYSTEMS - CHEMICAL CONTAMINATION

Tanks, can and bottle washing machines and lines where caustics, acids, detergents, and other compounds are used in cleaning, sterilizing, and flushing.

5.1.13 PHOTO PROCESSING EQUIPMENT

Tanks, automatic film processing machines or other facilities used in processing films, which may be contaminated with chemicals such as acetic acid, potassium ferricyanide and/or one of the many different types of the aromatic series of organic chemicals.

5.1.14 LAUNDRIES AND DYE WORKS

Laundry machines having under-rim or bottom inlets.

Dye vats in which toxic chemicals and dyes are used.

Wash water storage tanks equipped with pumps and re-circulating systems.

Retention and mixing tanks.

Shrinking, bluing and dyeing machines with direct connections to circulating systems. (NOTE: Some of these machines are equipped with pumps capable of forcing contaminated fluids through cross-connections into the public water supply.)

5.1.15 INDUSTRIAL FACILITIES

Tanks, lines, valves, fittings, and other equipment being subjected to hydraulic tests.

Hydraulically operated equipment where the City water pressure is used directly and may be subject to back pressure.

Equipment under hydraulic tests where pumps, rams, pressure cylinders or other hydraulic principles are used to provide pressures for testing purposes. (NOTE: In such cases air, gas or hydraulic fluids may be forced back into the public system.)

5.1.16 MOTION PICTURE STUDIOS

Open reservoirs, lagoons, tanks or similar facilities, used as props in the making of motion pictures (NOTE: These facilities may be heavily contaminated with body wastes, dyes, biological or chemical contaminants used in the prevention of algae and slime growths and to color the waters for color picture purposes.)

Automatic film processing machines, tanks, vats and other facilities used in processing films (NOTE: Toxic chemicals such as acetic acid, potassium ferricyanide and different types of organic chemicals may be used in these facilities.)

Special effects equipment in which chemicals and other materials may be injected into the water supply for special effects.

5.1.17 PETROLEUM PROCESSING

Steam boilers, steam lines, mud pumps and mud tanks, hydraulically operated Tretolite tanks, oil well casings (for dampening gas pressures) dehydration tanks, outlet lines from storage and dehydration tanks (for purging purposes), oil and gas tanks (to create hydraulic pressures and to hydraulically raise the oil and gas levels), gas and oil lines (for testing, evacuating and slugging purposes).

5.1.18 PAPER PROCESSING

Pulp, bleaching, dyeing and other processing equipment which may contaminate with toxic chemicals.

5.1.19 CANNERY EQUIPMENT

Pressure cookers, autoclave, retorts and other similar steam-connected facilities washers, cookers, tanks, lines flumes, and other equipment used for storing, washing, cleaning, blanching, cooking, flushing, fluming, or for transmission of foods, fertilizers or wastes.

5.1.20 AUXILIARY WATER SYSTEMS

Most state regulations require that the service connection from an approved water supply be protected by a suitable backflow prevention device where there is an auxiliary water supply system on the premises even though there are no overt cross-connections.

5.1.21 SOLAR ENERGY SYSTEMS

Solar Energy Systems for domestic hot water heating, space heating or cooling, industrial process water heating, swimming pool heating which may have cross-connections with the domestic water system. The Solar energy system may employ anti-freeze solutions or chemical corrosion inhibitors.

5.2 GROUP II INCLUDES POTENTIAL CROSS-CONNECTIONS INVOLVING WATER-USING FIXTURES AND EQUIPMENT

Situations which should be considered in evaluating the degree of hazard to the public potable water system include:

5.2.1. AUXILIARY, FIRE FIGHTING, IRRIGATION, SWIMMING POOLS, ETC. WATER SUPPLIES

Fire fighting systems - booster pumps to tank systems, storage facilities and Siamese connections.

Fish ponds - pump connected
Hot water systems - drainage and flushing facilities
Irrigation systems - parks, golf courses, playgrounds, schools etc.
Jumper connections
Lawn sprinklers under pressure
Ocean water for fire protection
Fountains - display, public and private
Public and private water companies
Private wells for domestic, commercial, irrigation, and industrial use
Swimming pool inlets, recirculation systems, chlorinators, and drains.

5.2.2. PROCESS WATERS RECIRCULATED

Air conditioning - refrigerated, air wash, make-up and drains
Ball mills
Cooling systems- refrigeration, Diesel engines, compressors
Any industries practicing water conservation
Ink mills
Paint mills

5.2.3. WATER TREATMENT FACILITIES

Addition of chemicals
Boiler feed treatment
Compound feeders
Scale, corrosion, slime control
Water filtration and water softening

5.2.4. SITUATIONS WHERE TOXIC OR OBJECTIONABLE CHEMICALS ARE OR MAY BE TRANSMITTED, STORED OR USED IN A MANNER WHICH MAY ENDANGER THE WATER SYSTEM

Brine lines	Photo processing & washing
Foamite line	Pickling tanks
Glycerine lines	Plating works
Laboratory equipment	Refrigerants
Mixing tanks	
Oil systems	

5.2.5. PRIMING LINES - THAT HAVE BEEN FOUND CONNECTED TO:

Acid Pumps	Cyanide pumps
Air Conditioner Pumps	Gasoline lifts
Air pumps	Glycerine Pumps
Booster Pumps	Hydraulic elevator pumps
Cadmium solution pumps	Sewer pumps
Caustic pumps	Sump Ejectors
Chromic Acid Pumps	Venturi float lines

5.2.6. DIRECT WATER CONNECTIONS TO STEAM SYSTEMS AND HYDRAULIC ELEVATORS AND AIR LINES, ETC.

- Boilers - high and low pressure
- Cold and hot water return to steam systems
- Compressors
- Direct-connected hydraulic elevators
- Elevator air lines
- Return and surge tank hydraulic elevator systems
- Steam ejectors
- Steam lines
- Suction tees
- Turbo burners
- Vacuum systems

5.2.7. INDUSTRIAL LINES

- Laboratories
- All types of industries

5.2.8. INTERSTREET SERVICES - LOW PRESSURE AND FRINGE AREA

- Elevation and pressure conditions
- More than one service to a premise

5.2.9. INDUSTRIAL WATER-USE CONNECTIONS

Box Plants-glue pots, soaking vats, steaming processes

Canneries - pressure cookers, retorts, wash lines, salt wash lines

Creameries - distilled water, ice water, tap water, hot water, steam, milk, and other products

Laundries - caustic soap solutions, hot and cold water, softened hot and cold water, chlorinated water, and boiler room equipment

Metal Works - testing lines, cooling systems, plating solutions, metal processing lines, cutting oil, lubricant lines, and welding machines

Oil Companies - flushing oil lines, tanks and systems - to dehydrators heating and cooling systems

Packing houses - rendering vats, pressure reduction vats, and hide soaking and pickling vats

Rubber and rubber goods plants - roll cooling machines, cookers, water transmission systems, brine and styrene solutions

Shipyards - salt water systems, tank testing facilities, ship line testing, pierhead outlets, fire systems, prestolite systems

Tanneries - Chemical solution and dye lines, lanolin lines and soaking tanks

Hospitals - All types

5.2.10 CROSS-CONNECTIONS INVOLVING SEWAGE OR SEWAGE DISPOSAL FACILITIES

Fire sprinkler drain lines

Compressors- cooling systems with direct connection

Diesel engines - cooling systems with direct connection

Direct water lines to sewers for drains or flushing

Flush manholes - water supply to

Flush tanks

Holding tanks - camper or trailer toilet flushing facilities

Various blowoffs or drains to sewers

Reservoir by-passes and drains to sewer or storm drains

Sewage chlorinators - direct injection

Sewer flushing equipment - water connection

Sewage sump pumps and ejectors - water operated

Water street mains drain to sewer or storm drains

Priming lines

Water operated pumps	Potato Peelers
Baptismal founts	Shrinking tanks
Brewery vats	Sinks
Brine tanks	Soaking tanks
Cheese tanks	Spring-loaded glass
Culture vats	Washers
Dipper vats	Steam soap washing
Dye tanks	Device
Food Mixing tanks	Steam table
Kitchen Equipment	Connections
Morticians aspirators	Sewage sump ejectors
Photographic tanks	Swimming pool gutter
Pickling tanks	Drains
Plating tanks	Tanks
Therapeutic baths	Vats
Water jacketed tanks, vats, and pots	

5.2.11 SPECIAL USES WHERE CROSS- CONNECTIONS ARE USUALLY FOUND

Baptismal tanks
 Blood plasma equipment
 Blueprint machines
 Car washing equipment - caustic and soap guns, mixers and
 Boiler equipment
 Chillers
 Commercial vacuum cleaning equipment
 Construction equipment lines
 Deaerators
 Garbage washing with steam and cold water connections
 Humidity Controls
 Hydraulic fertilizer applications
 Mortuaries
 Oil well leases
 Pest control equipment - orchard spray
 Pressure and steam cookers
 Roof and house tanks
 Soap mixing layouts
 Solar heating systems
 Steamer supply equipment

Storage reservoirs
Veterinary hospitals
Water-operated siphonage all types
Weed control equipment
X-ray equipment

5.2.12 PLUMBING AND WATER PIPING CROSS-CONNECTIONS

Aspirators
Autoclaves
Auto shampoo
Basins
Bathtubs
Bedpan washers
Bidets
Blueprint machines
Bottle washers
Carbonators
Can washers
Coffee urns
Colonic irrigators
Laundry trays
Overflow tanks
Drinking fountains
Pressure cookers
Refrigeration units
Shampoo units
Soda fountain
Turbo burner drains
Toilets - flush valves low tanks
Overhead exposed leaking sewage
California washers (below flood level)
Integral tank and closet bowls
Lawn sprinklers (at last control valve)
Cuspidors - water operated
Dental cuspidors - water operated
Plumbers enemy (identical gadgets)
Plumbers friend (removable hose connection between bib and lavatory
or sink drain)

- Fish ponds
- Frostproof toilets
- Garbage grinding devices
- Grease traps
- Hoppers (Utility)
- Hose bibs - (certain types)
- Hydraulic vacuum cleaners
- Instrument sterilizers
- Insecticide sprayers water operated
- Laboratory operated vacuum pumps
- Cooking kettles
- Laundry washers
- Dishwasher
- Pasteurizers
- Urinals
- Washing machines
- Watering troughs
- Yard outlets -submerged
- Yard sprinkling nozzles

5.3 GROUP III LISTS CHEMICAL COMPOUNDS USED IN WATER TREATMENT

Chemicals or chemical compounds which may create a hazard to the public system when injected or otherwise introduced into the consumer's system include:

5.3.1. Agriculture

Solutions of chemicals used by agriculture for many purposes. The following are some of the chemical compounds which may be injected into irrigation systems for spreading purposes. All of them are toxic in concentrated solutions.

Fertilizers	- Ammonium Salts	Phosphates
	Ammonia Gas	Potassium Salts
Weedicides	- 2.4.D.	Sodium Chlorate
	Dinitrophenol	Borax
	Karmex	Sodium Arsenite
	2.4.5.T-	Methyl bromide
	Pentachlorophenol	

Pesticides	- DDT	Parathion
	TDE	Malathion
	BHC	Nicotine
	MH	Lindane
	TEPP	

5.3.2. COOLING SYSTEMS - OPEN OR CLOSED

Cooling systems - including cooling towers - usually require some treatment of the water for algae, slime or corrosion control.

Chemicals frequently used for this purpose may include the following toxic chemicals:

Quaternary ammonium compounds
 Pentachlorophenol
 Mercury
 Chromium

Or the following chemicals which are toxic in higher concentrations:

Chlorine	Permanganate
Bromine	Glucosides
Copper	

5.3.3. PLATING PLANTS

In Plating work, materials are first cleaned in acid or caustic solutions at concentrations that are highly toxic, after which they are immersed in plating solutions which are highly toxic. Such solutions may contain:

Cyanides
 Fluorides

Or metals in solution such as:

Copper	Cadmium
Chromium	Antimony
Nickel	Silver Salts, etc.

5.3.4. STEAM BOILER PLANTS

Most boiler plants will use some form of boiler feed water treatment. The chemicals normally used for this purpose include:

Highly toxic compounds such as:

Cyclohexylamine
Hydrazine
Morpholine
Benzylamine

Or the less toxic compounds such as:

Acids
Sodium hydroxide
Sodium sulphate
Sodium phosphate
Sodium nitrate
Sodium illuminite
Sodium alginate

5.3.5. DYE PLANTS

Most solutions used in dyeing are highly toxic. The toxicity depends on the chemicals used and their concentrations. The following types or chemical groups of dyes are generally used:

Vat Dye
Nitro Dye

Mordant Dye
Metallized Dye

Chrome Dye
Thiazol Dye

5.4 TYPE OF BACKFLOW PROTECTION REQUIRED

An approved backflow prevention device of the type designated shall be installed on each water service connection to the following types of facilities. This list is presented as a guideline and should not be construed as being complete.

Abbreviations used are as follows:

A.G. - Air Gap Separation

R.P.Z. - Reduced Pressure Zone Backflow Preventer

D.C.A. - Double Check Assembly
P.V.B. - Pressure Vacuum Breaker
A.V.B. - Atmospheric Vacuum Breaker

<u>Type of Facility</u>	<u>Minimum Type of Protection</u>
Breweries, distillers, bottling plants	D.C.A.
Car wash with recycling system and/or wax eductor	R.P.Z.
Chemical plants	R.P.Z.
Dairies	D.C.A.
Dentist office	R.P.Z.
Fertilizer plants	R.P.Z.
Film laboratory or processing plant	R.P.Z.
Food or beverage plant	D.C.A.
Hospitals, clinics, medical buildings	R.P.Z. parallel
Irrigation systems (without chemical injection)	D.C.A. or P.V.B.
Laboratories	R.P.Z.
Laundries & dry cleaning plants	D.C.A. or R.P.Z.
Machine tool plants (health or system hazard)	R.P.Z.
Machine tool plants (Pollutional Hazard)	D.C.A. or R.P.Z.
Metal processing plant (Health or system hazard)	R.P.Z.
Metal processing plant (Pollutional hazard)	D.C.A.
Metal plating plant	R.P.Z.
Morgues or mortuaries	R.P.Z.
Nursing homes	R.P.Z.
Packing houses or rendering plants	R.P.Z.
Paper products plant	R.P.Z.
Pesticides (exterminating companies)	P.V.B.
overhead fill petroleum processing plant	R.P.Z.
Petroleum storage yard (health or system hazard)	R.P.Z.
Petroleum storage yard (pollutional hazard)	D.C.A.
Pharmaceutical or cosmetic plant	R.P.Z.
Piers, docks, or waterfront facilities	R.P.Z.
Power plants	R.P.Z.
Radioactive material plants	R.P.Z.
Restaurants, with soap educators and/or	R.P.Z.
Industrial type disposal	R.P.Z.
Sand and gravel plants	D.C.A.

Schools with laboratories	A.V.B. or D.C.A.
Single family buildings one and two stories only	Dual Check or D.C.A.
Swimming pools with piped fill line at pool	A.G. or R.P.Z.
Sewage treatment plant	R.P.Z.
Sewage pumping stations	P.V.B. or R.P.Z.
Tall Buildings requiring a booster pump	R.P.Z. or R.P.D.C.
Veterinary establishments	R.P.Z.

In addition to and including those types of facilities previously listed, an approved backflow prevention device of the type designated shall be installed on each domestic water service connection to any premises containing the following real or potential hazards. (Note: Any Commercial establishment not delineated above will be required to install a double check valve assembly.

Premises having an auxiliary water system not connected to public water system	R.P.Z.
Premises having a water storage tank, reservoir, pond, or similar appurtenance	R.P.Z.
Premises having a steam boiler, cooling system or hot water heating system where chemical water conditioners are used	R.P.Z.
Premises having submerged inlets to equipment	R.P.Z.
Premises having self-draining yard hydrants, fountains, hose boxes of similar devices presenting a health or system hazard (i.e., chemical storage plants, tank farms, bulk storage yards)	R.P.Z.
Premises having self-draining yard hydrants fountains, hose boxes, or similar devices presenting a pollutional hazard (i.e., parks, play fields, cemeteries)	D.C.A.
Others specified by the Water Services Division	

5.5 INSTALLATIONS REQUIRING CONTINUOUS SERVICE: PARALLEL INSTALLATION

All backflow prevention devices with test cocks are required to be tested with a minimum frequency of once per year. Testing requires a water shutdown usually lasting five to twenty (20) minutes. For facilities that require an uninterrupted supply of water, and when it is not possible to provide water service from two separate meters, provisions shall be made for a "parallel installation" of backflow prevention devices.

Multi-story buildings which have a number of flushometer toilets should be equipped with parallel devices. Experience has shown if the water supply is shut off to this type of building, flushometers may have to be manually reset.

During testing one device is left on while the other is being tested. Usually the two devices are sized one device size smaller than the service line, e.g. one 2 inch device or two 1 1/2 inch devices, one 8 inch device or two 6 inch devices.

The Water Operations Department will not accept an unprotected bypass around a backflow preventer when the device is in need of testing, repair or replacement.

5.6 HEALTH HAZARD; SYSTEM HAZARD; POLLUTIONAL HAZARD

"Health Hazard" means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well being of users. The word "severe as used to qualify "health hazard" means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death. "System Hazard" means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a potable consumer's water system. "Pollutional Hazard" means a condition through which an aesthetically objectionable or degrading material not dangerous to health may enter the public water system or a potable consumer's water system.

5.7 EXTERMINATING COMPANIES

All tanks, tank trucks, and spraying apparatus used to convey pesticides or herbicides in an exterminating process are required to use only overhead (air gap) piping arrangements. All filling locations will consist of over-head piping arrangements with correctly installed pressure vacuum breakers. If for any reason an overhead piping arrangement cannot be used, a reduce pressure zone backflow preventer must be installed on the fill line.

5.8 CROSS-CONNECTION-CONTROL REQUIREMENTS FOR FIRE PROTECTION SYSTEMS

For purposes of cross-connection control, fire protection systems shall be classified as Sprinkler, Standpipe, or Combined. Sprinkler systems shall be further classified as follows:

Class 1 - directly supplied from public water mains only; no pumps, tanks, or reservoirs; no physical connection from other water supplies; no antifreeze or additives of any kind; all sprinkler drains discharging to atmosphere, dry wells, or other safe outlets.

Class 2 - directly supplied from public mains, same as Class 1, except that booster pumps may be installed in supply lines.

Class 3 - directly supplied from public mains, same as Class 1, plus one or more of the following: Elevated storage tanks or pressure tanks; fire pumps taking suction from above-ground covered reservoirs or tanks. All storage facilities shall be filled from the potable water supply and maintained in a potable condition.

Class 4 - directly supplied from public mains similar to Classes 1 and 2, and with an auxiliary water supply on or available to the premises; or an auxiliary water supply located within approximately 1700 ft. of the pumper connection.

Class 5 - directly supplied from public mains, and interconnected with auxiliary supplies, such as: pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells; mills or other industrial water systems; or where antifreeze or other additives are used.

Class 6 - directly supplied from public water mains only, with or without gravity storage or pump suction tanks, and interconnected with industrial systems.

Standpipe systems shall be further classified as Non hazardous (impurities equal to Class 3 or lower sprinklers).

Fire Protection systems shall be contained from the public water mains as follows:

Tall buildings that require a booster pump shall be contained by the installation of a reduced pressure zone detector check.

Class 1 and Class 2 sprinkler systems shall include the following checking device in the water supply lines from the public mains: an approved double detector check backflow preventer with by-pass.

By-pass shall be equipped with appropriate checking device. Provision shall be made to test all devices, including shut-off valves, as required. All devices shall be listed or classified for fire protection service by Underwriters Laboratories in accordance with UL Standard 312. *The Georgia code requires at least one of the checking devices to be internally loaded.

Class 3 sprinkler systems, and non hazardous standpipe systems, shall be contained by the installation of double detector check backflow preventer. In addition, all backflow preventer used on fire protection systems shall be classified by Underwriters Laboratories in accordance with UL Standard 312.

Class 4 and Class 5 sprinkler systems, and Hazardous standpipe systems, shall be contained by reduced pressure zone backflow preventer that are classified in accordance with UL 312.

Class 6 sprinkler systems, and standpipe systems of similar degree of hazard, shall be contained by procedures determined after a survey of the premises.

Combined sprinkler and standpipe systems shall be contained from the public mains by procedures applicable to the component that represents the higher degree of impurity.

The purpose of certain checking devices used, or likely to be used, with fire protection systems is outlined below to call attention to those approved for cross-connection control and those that are not:

- (A) double detector check - To prevent backflow of polluted water from fire protection systems into the potable water system; to detect leaks in fire protection systems; and to provide directional flow.
- (B) reduced pressure zone check - To prevent backflow of contaminated water from fire protection systems into the potable water system; and to provide directional flow.
- (C) reduced pressure detector check - To prevent backflow of contaminated water from fire protection systems into the potable water system; to detect unauthorized use of water; to detect leaks in the fire protection system; and to provide a directional flow.

The two OS&Y Resilient Seat shut off valves that are necessary for periodic testing of a backflow preventer must be attached directly to the inlet and outlet flanges of the device and need to be in addition to any valve(s) already required in the water supply piping.

The shut-off valves required for periodic testing of a backflow preventer, shall be supplied by the backflow preventer manufacturer and shall be listed for fire protection service by a nationally recognized testing laboratory, such as FM or UL, and the inlet valve shall include an approved test cock on the upstream side.

The Water and Sewer Bureau requirements for Cross-Connection Control for fire systems does not preclude any requirements that may be the responsibility of the Fire Marshall of the City of Savannah Inspections Department.

PRIVATE FIRE HYDRANTS

On private property where there are private fire hydrants, following requirements are necessary:

- 1) UL, FM approved fireline meter and strainer to be installed and sized for designed fire flow.
- 2) University of Southern California (USC) approved double detector check valve and back flow prevention assembly to be installed downstream of the fireline meter.

CITY FIRE HYDRANT USE

Contractors or any person using a City Fire Hydrant for any purpose must post a bond with the Revenue Department and install a fire hydrant meter and backflow preventer supplied by the City Water Department. Upon return to the City in good condition, the bond will be returned, once all payments for water use have been completed.

5.9 FIRE PROTECTION GUIDELINES

Prior to any connection of new or renovated fire sprinkler systems to the City of Savannah's Water Distribution System, the following procedures are required:

1. Three sets of plans and hydraulic design data must be submitted for review to the Development Services office. All plans must be prepared or reviewed by a professional engineer and plans must be stamped with the engineers seal.
2. The plans will be reviewed and one set returned with any required changes. Changes will be noted on the plans. The plans will also be accompanied by a review letter. One set of plans will be retained for our files and one provided to the Engineering Department for inspection purposes.
3. Any Booster pump installations will be designed to insure that pressure in the distribution system does not fall below 20 psi residual. A minimum of 20 psi residual must be maintained in the distribution system at all times. Detailed specifications on any fire pump are required for review for installation. No anti-freeze or similar chemical will be allowed in Fire Sprinkler Systems unless approved by the Water and Sewer Bureau.

BACKFLOW PREVENTION REQUIREMENTS

All new, renovated or existing Fire Sprinkler Systems will be required to have an approved back flow prevention assembly with an approved by-pass meter. The by-pass line is also required to have a line size back flow prevention assembly. The meter must register in cubic feet. The back flow prevention assembly must meet all requirements of AWWA Standard C-506-78 and the University of Southern California.

INSTALLATION OF DEVICES

Installation of the back flow prevention assembly valve and by-pass meter are the owner's responsibility. The back flow prevention assembly valve and by-pass meter will in all cases be installed so that they are readily accessible for maintenance and inspections. Wet taps to the City water main will be scheduled accordingly with the Water Distribution Superintendent after all plans and hydraulic data have been reviewed and approved by the Water and Sewer Bureau and the Senior Fire Inspector of the City of Savannah's Inspections Department and the inspection of the installed underground system has been approved by the Engineering Department. At least one week's advance notice will be given to the Water Distribution Department prior to any wet tap of the City main. The Water Distribution Department will provide one man and the tapping machine. The owner will be responsible to coordinate all street cuts and traffic obstructions with the City Traffic Engineering and Streets Maintenance Departments. Any construction activity on or near City owned trees and shrubs will be coordinated with the Park and Tree Department. The owner will be responsible to provide all hardware, men and equipment required to make the wet tap and to provide adequate safety measures to protect the workmen and the public.

All tapping sleeves will be ductile or cast iron mechanical joint fittings in accordance with AWWA Standard C-500 or C-550. All installations requiring thrust blocking, tie-rods, or retaining glands will be the responsibility of the owner. Adequate design and installation procedures must be taken to prevent leakage of the system. The developer or owner shall provide to the City, a statement from the Project Engineer certifying that the materials and workmanship including pipe, bedding, thrustblock, valves, manholes, and other related materials meet the City specifications and standards. Upon request by the City, the certification shall be substantiated by material affidavits from the supplier.

All underground fire systems will be pressure tested from the City main to the back flow prevention assembly and appurtenances. Any fire line less than 50 feet from the main to the backflow prevention assembly will not be required to disinfect provided that the underground system was thoroughly flushed and protected from foreign materials during installation. Any fire line in excess of 50 feet will be required to disinfect and sample for bacteriological analysis.

It will be the responsibility of the owner to adequately pressure test the underground system from the back flow prevention assembly to the building. No connection will be made to the City System until the testing requirements have been met and observed by the City Engineering Inspector.

For installation requirements (location), see Section IX of the Policy Manual.

MAINTENANCE REQUIREMENTS

It will be the responsibility of the owner to maintain the Fire Sprinkler System from the valve at the City water main to the inside of the building including the back flow prevention assembly. The City Water Distribution Department will maintain the meter and meter couplings. A letter from the owner is required delineating maintenance responsibilities of the fire system. This owner/client declaration must be on file in the Water and Sewer Bureau.

RESTRICTIONS

The domestic water line and the fire line in all cases will be separated unless the main line is oversized to meet both the total domestic and fire demand requirements of the system. It will be the responsibility of the consultant and/or owner to provide total water demand requirements of the system with the plans and hydraulic data. Both lines will be tapped individually at the City Water Main. Any unauthorized use of water except for fire protection is prohibited.

INSPECTIONS

When installation of the fire sprinkler system is completed, notification will be given to the City of Savannah's Water Distribution Department. An inspection of the system from the City water main to the back flow prevention assembly valve will be scheduled after notification. Appropriate follow-up inspections will be scheduled accordingly.

FIRE SPRINKLER SYSTEMS ON COMMON DOMESTIC LINES

Guidelines for minor fire sprinkler systems utilizing a common water line for both domestic service and fire protection are summarized below. The Guidelines will still require several calculations in order to determine total system demand (TSD). Once TSD has been determined, meter sizing can be made in order to prevent damage to the meter and/or over/under registration of the meter. The consultant and/or architect will be responsible to determine both TSD and meter sizing.

GUIDELINES FOR FIRE SPRINKLER SYSTEMS LESS THAN 6 HEADS

PURPOSE: To outline basic minimum requirements for the installation of fire sprinkler systems for minor systems. Minor systems are defined as those systems with a maximum of 6 sprinkler heads (160 gpm total system demand, TSD) utilizing a common line for the purpose of fire protection and domestic service.

PROCEDURE:

A. Determine Customer Peak Demand to Include:

- 1) Domestic demand (determination of each plumbing fixture valve)
- 2) Irrigation demand
- 3) Continuous load total demand (any equipment requiring continuous flow)

B. Determine Total Fire Sprinkler Head Demand in Building

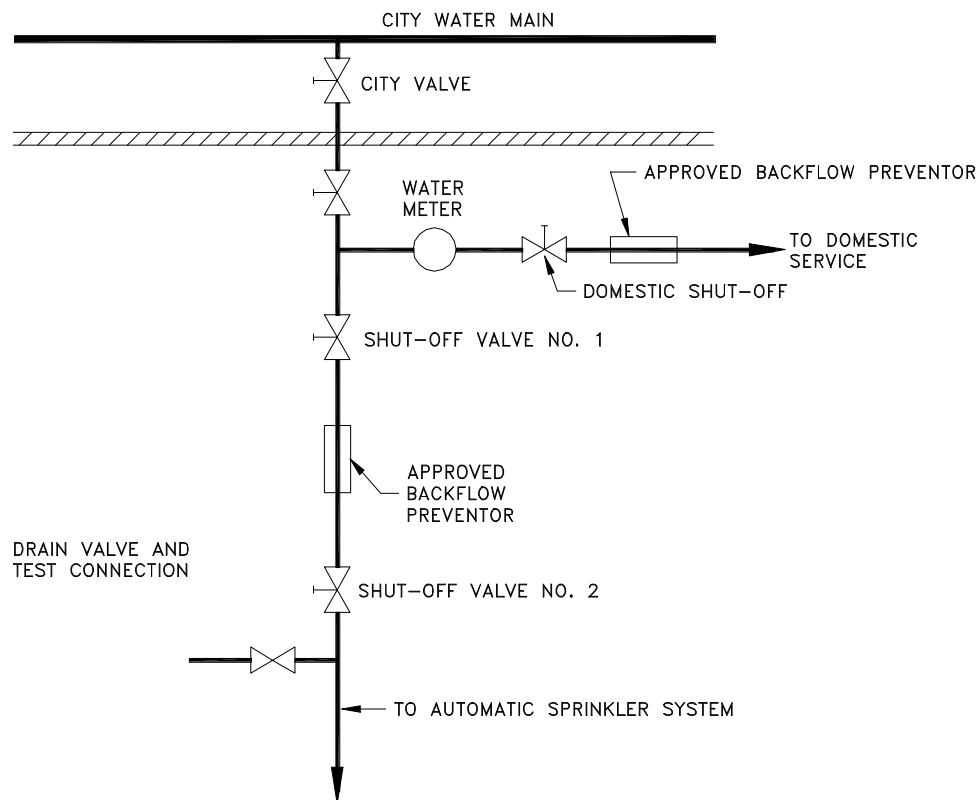
C. Determine Adequacy of Source Supply to Include Recent Fire Flow Test

D. Total System Demand in Gallons Per Minute (GPM)

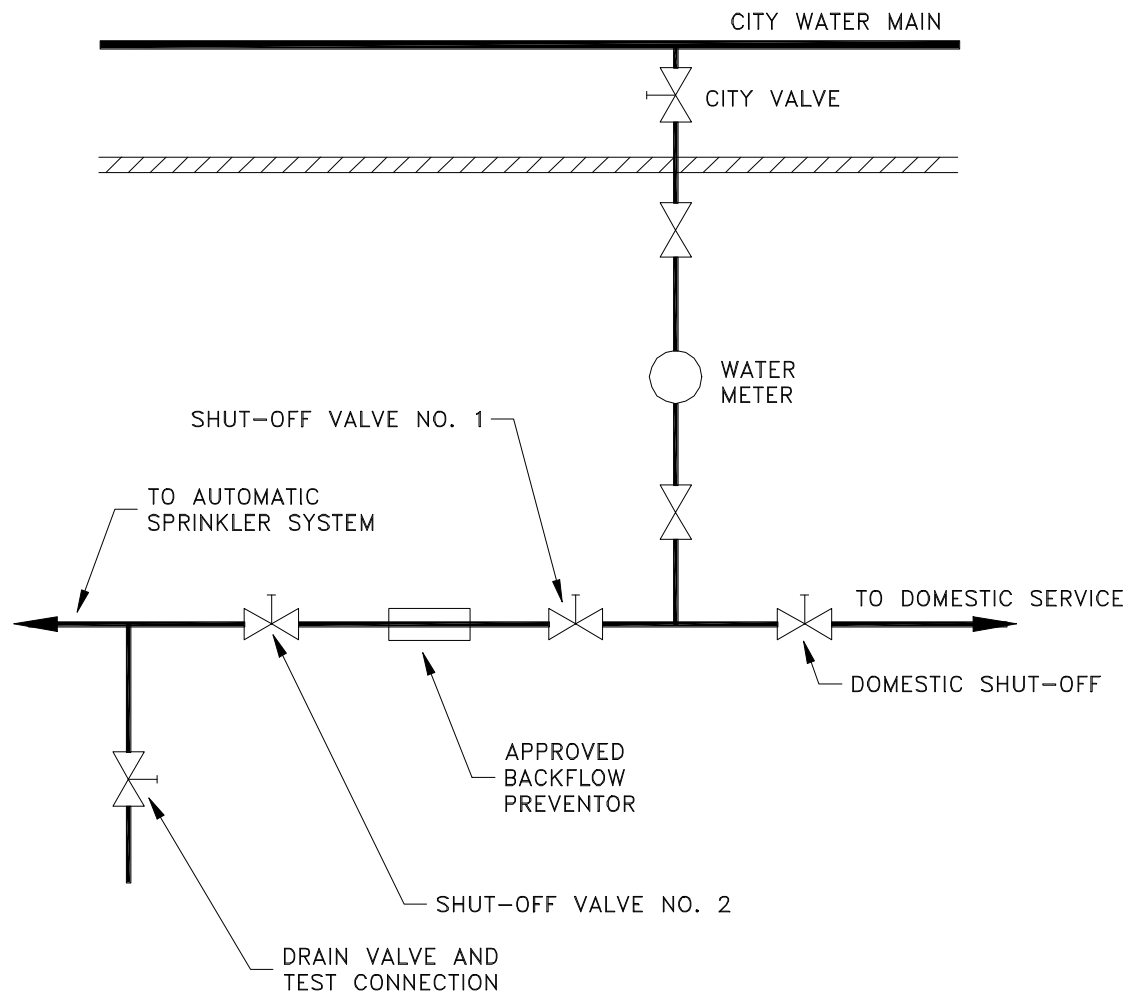
Customer Peak Demand-----gpm
Fire Sprinkler Demand-----gpm
Total System Demand-----gpm

REQUIREMENTS/LIMITATIONS:

- 1) Common fire/domestic lines are limited to a maximum of six sprinkler heads or a total of 160 gpm total demand for both fire and domestic flow.
- 2) Installation requirement is limited to the following arrangement only for new establishments:



- 3) Installation requirement is limited to the following arrangement only for old establishments using an existing water service line:



- 4) All double detector check valves must meet the specifications of AWWA Standard C-506-78 and the University of Southern California.
- 5) Any unauthorized use of water designated for fire protection is prohibited.
- 6) When installation of the fire sprinkler system is completed, notification will be given to the City Water Distribution Department. An inspection of the system from the City water main to the double detector check valve will be scheduled after notification.
- 7) Any fire system in excess of six heads or exceeding 160 gpm total system demand will require installation of a separate fire line. The City of Savannah Fire Protection Guidelines will apply to any system requiring a separate main and/or tap.
- 8) All fire lines will be the responsibility of the owner for both operation and maintenance to include the double detector check valve. The double detector check valve must be tested upon installation, annually and upon request by the Water Operations Department, documentation that the tests have been performed must be presented to this office.

VIOLATIONS: NEW SYSTEMS

No water will be made available to the building until the system is in compliance. The owner will be notified in writing of any violations found during the initial inspection. A follow up inspection will be scheduled giving adequate time for the proper connections to be made. If no corrective action is taken to correct the deficiencies, notification in writing will be given to the owner that water service will not be made available to the building.

VIOLATIONS: EXISTING SYSTEMS

Existing systems, not in compliance, will have one year from notification by the City Water Distribution Department to make necessary correction to the fire sprinkler system.

5.9.1 OTHER CROSS-CONNECTION HAZARDS

FIXTURE INLETS OR VALVED OUTLETS with hose attachments, which constitute a cross-connection, shall be protected by the proper approved vacuum breaker (AVB, HBVB, etc.) installed at least six inches above the highest point of usage and located on the discharge side of the last valve. Fixtures with integral vacuum breaker manufactured as a unit may be installed in accordance with their approved requirements.

AIR CONDITION COOLING TOWER - Potable water inlet shall have an AGT separation of twice the inside diameter of the inlet line or a minimum of two inches above the flood level rim.

ASPIRATORS AND EJECTORS - Shall have an AVB or PVB, depending upon the degree of hazard, on the faucet from which these devices are attached or operated.

BOOSTER PUMPS - All booster pumps shall be provided with a low pressure cut off or approved throttling valve unless other acceptable provisions are made to prevent the creation of low or negative pressures in the piping system.

PRIVATE WELLS - Shall not be interconnected unless the public supply is protected by a RPZ at the service connection, and approval is given by the Director of the City's Water Operations Department.

PORTABLE SPRAY AND CLEANING EQUIPMENT - Any portable pressure spray or cleaning units that have the capability of connecting to any potable water supply and do not contain a built-in approved air gap, should be fitted with a reduced pressure backflow device or double check valve assembly depending on the degree of hazard.

MISCELLANEOUS USES OF WATER FROM FIRE HYDRANTS - The operation of fire hydrants by other than authorized personnel is prohibited. The Department may permit the use of water from a fire hydrant for construction or other purposes provided the applicant shall properly apply for, and adhere to backflow and metering requirements.

TEMPORARY METERS FOR CONSTRUCTION - All temporary meters for construction will be equipped with an approved backflow prevention device.

NOTE: Any device, equipment, or situation not covered by this cross-connection policy, which may constitute a potential health hazard, will be examined for appropriate treatment by the Water Distribution Department or authorized agent.

VI. THERMAL PROTECTION

OWNER RESPONSIBILITY

All water systems that have been closed or contained by the installation of backflow preventer or similar checking device must make necessary alterations to the plumbing system to protect against thermal expansion.

If water is heated and stored in a consumer's system, in which any branch or all of the system has been closed by the installation of a backflow preventer, a pressure reducing valve, or any other checking device, an approved auxiliary relief valve shall be installed at an accessible location between the checking device and the water heating equipment, to limit thermal expansion of the water being heated to not more than 80 pounds per square inch no-flow pressure at any fixture on the system. A discharge line not less than 1/4-inch inside diameter shall be piped to an approved location where no water damage would result from the discharge, and any water in the discharge pipe would drain by gravity, and be protected from freezing.

The installation of a device to control thermal expansion will be the responsibility of the owner and plumbing official having jurisdiction.

VII. PLAN REVIEW

7.1 DRAWING SUBMITTALS

Two sets of plans and specifications for the backflow prevention installation must be submitted to the City for approval prior to installation of the device.

7.2 DESIGN SPECIFICATIONS

Any backflow prevention device required shall be a model and size approved by the City. The term "Approved Backflow Prevention Device" shall mean a device that has been manufactured in full conformance with the standards established by the American Water Works Association entitled AWWA-0506-78 Standards for Reduced Pressure Principles Devices and Double Check Valve Backflow Prevention Devices and has completely complied with the laboratory and field performance specifications of the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California. A list of approved backflow prevention assemblies shall be maintained by the City and may be revised or supplemented by order of the Director.

VIII. NON-COMPLIANCE - ENFORCEMENT PROCEDURES

8.1 ENFORCEMENT PROCEDURES

Non-compliance and enforcement procedures will fall into three (3) categories:

- A. Existing water customers who do not have a cross-connection control device in their system at present, will be required to install such a device under this ordinance. Customers in this category where contaminants on their property has been determined by the Director to represent a high hazard to the public water will be required to take immediate corrective action upon notification. Customers will be required to install approved backflow prevention devices within one year of notification when the Director has determined that a potential high hazard exists or within two years for a potential low hazard condition.
- B. Any new water customer after the effective date of the cross-connection control policy, will be required to install an approved backflow prevention device prior to connection to the City water systems whenever the Director has determined that contaminants, or pollutants on the customer's property represent a hazard to the public water system.
- C. Those existing water customers which are required and have backflow prevention devices in their system which do not meet City standards or have been found to be malfunctioning. These customers will be required to replace backflow prevention devices which do meet City Standards. Malfunctioning backflow preventers for low hazard conditions must be repaired or replaced by the customers with an approved backflow prevention device within 30 days after notification by the City. For high hazard sources, the malfunctioning backflow device must be replaced or repaired immediately.

8.2 TERMINATION OF WATER SERVICE

- A. Service of water to any premises will be discontinued by the Water Purveyor if a backflow prevention device required by law, rules, or regulations is not installed, tested, and maintained; or if it is found that a backflow prevention device has been removed or by-passed; or if unprotected cross-connection exists on the premises and there is inadequate backflow protection at the service connections. Water service will not be restored until such conditions or defects are corrected.

- B. Water Services will be terminated for water customers who do not comply with the Cross-connection Policy. A written notice shall be served to the offending party that water services will be terminated within ten (10) days if the requirements of this policy are met.
- C. The water customer shall notify the City Manager in writing within 10 days to appeal termination action. The City Manager shall convene a hearing within ten 10 days of receipt of the written notice (unless a later date is mutually agreed to) to hear the appeal of the water customer. Failure to appeal will result in entry of an order directing termination of water service.

8.3 LEGAL ACTION

After the evidence has been reviewed by the hearing authority and a decision entered with a copy to the customer, the City may terminate water service and/or pursue any available legal remedy.

8.4 PENALTY: COSTS

The penalty for violating this Policy shall not be more than one-thousand dollars for each violation. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense.

IX. INSTALLATION REQUIREMENTS

9.1 INSTALLATION AT CITY RIGHT-OF-WAY OR EASEMENT

All backflow prevention devices and water meters will be installed within the City right-of-way or easement. Any deviation from this directive must have prior approval under special conditions, from the Director of Water and Sewer Bureau.

9.2 INSTALLATION WITHIN THE BUILDING ESTABLISHMENT

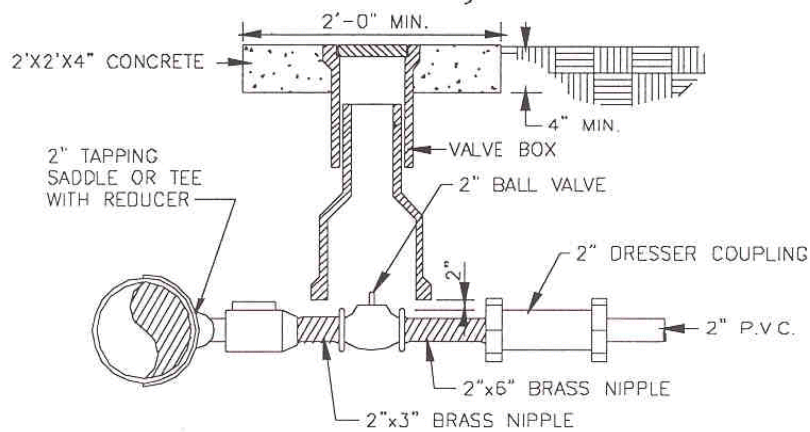
Under special conditions, approved backflow prevention devices will be allowed within the building establishments. Cross-Connection control staff must approve the installation. These conditions include:

1. No connection between the tap at the City main and the backflow preventer is allowed.
2. Backflow preventer will not be installed in an area where discharge can cause damage. A small, occasional discharge from the vent is normal. Heavy discharge may occur if the devices malfunction. An approved drain must be installed to collect any water discharged from the backflow preventer.
3. Any approved drain must have free air space between the vent port and the drain conduit (air gap).
4. Backflow prevention device must be installed in an area which is readily accessible for testing and maintenance. Installation in any confined area which is not conducive to normal maintenance activities is prohibited.

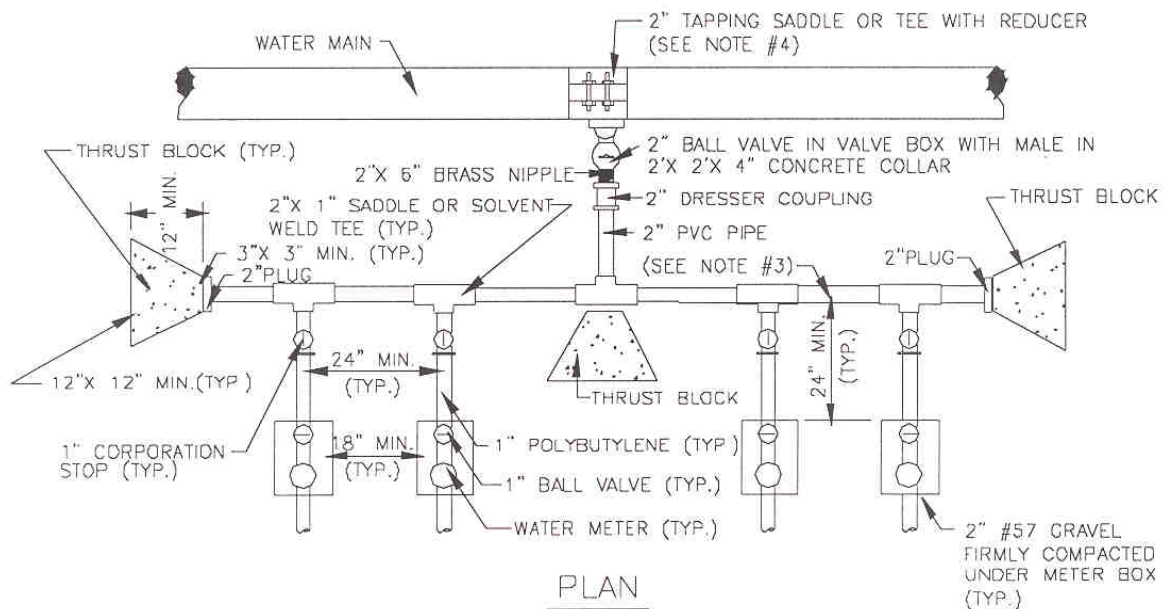
9.3 RESPONSIBILITY OF OPERATION AND MAINTENANCE

The owner will be responsible for operation and maintenance of the backflow preventer in addition to maintaining all appurtenances down-stream of the water meter.

INSTALLATION DIAGRAMS



PROFILE



PLAN

NOTES:

1. ALL METERS SHALL BE INSTALLED WITHIN CITY OF SAVANNAH RIGHT OF WAY OR EASEMENT.
2. CONCRETE COLLAR IS NOT REQUIRED ON VALVE BOXES INSTALLED IN PAVED AREAS
3. A 2" PIPE MAY BE USED FOR UP TO SIX (6) UNITS. 2" PIPE SHALL BE SCHEDULE 40 ASTM D 1785

4. TAPPING SADDLE TO BE DUCTILE IRON WITH TYPE 304 STAINLESS STEEL DOUBLE STRAPS, BOLTS, NUTS, AND WASHERS. FINISH IS FUSION BONDED NYLON TO AVERAGE THICKNESS OF 12 MILS.

City of Savannah

STANDARD CONSTRUCTION DETAILS

MANIFOLD FOR MULTIPLE METERS INST.



PLATE NUMBER

W16

APPROVED:

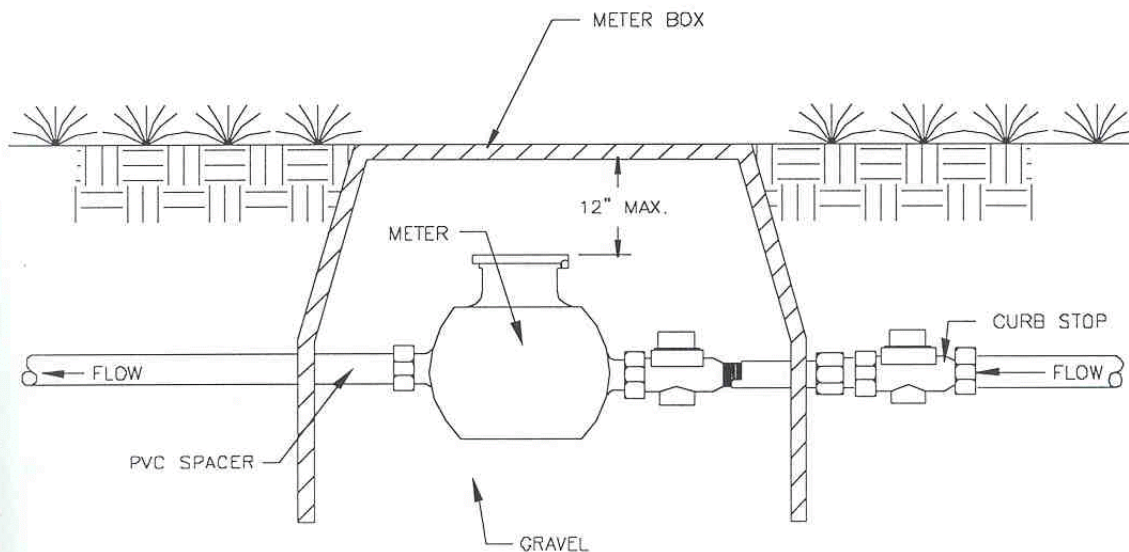
Henry D. Johnson
CITY ENGINEER

SCALE:

N.T.S.

DATED:

APRIL 1999



NOTE:

1. APPLICABLE TO EXIST. RESIDENCES ONLY.
2. APPLICABLE TO 3/4", 5/8" AND 1" ONLY.

City of Savannah

STANDARD CONSTRUCTION DETAILS
WATER METER W/O BACKFLOW PREV.



PLATE NUMBER

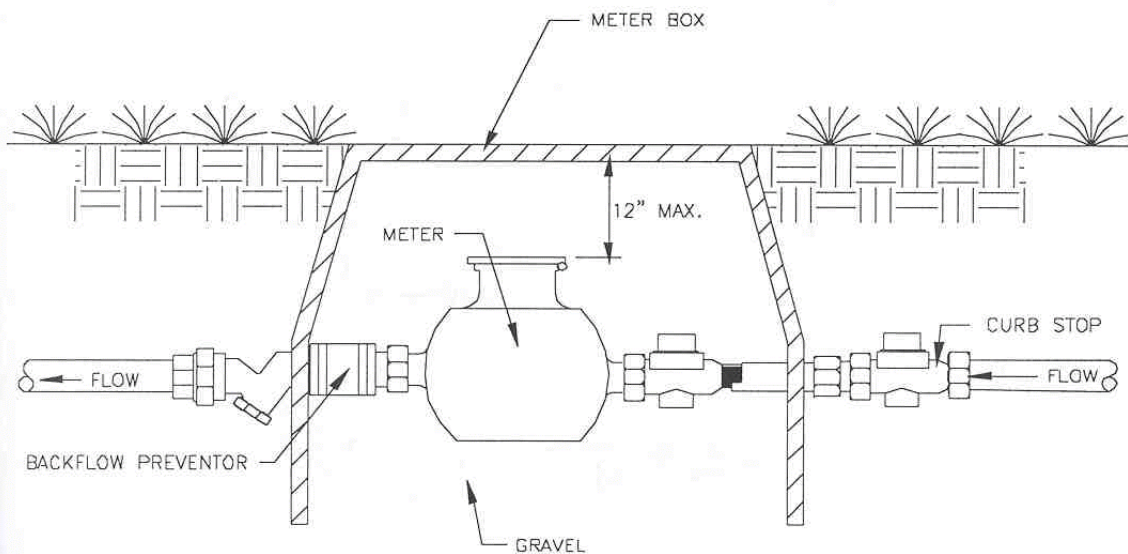
W18

APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999



NOTE:

1. APPLICABLE TO ALL NEW RESIDENCES (ONE AND TWO STORY).
2. APPLICABLE TO 3/4", 5/8" AND 1" ONLY

City of Savannah

STANDARD CONSTRUCTION DETAILS

WATER METER W/BACKFLOW PREVENTER



PLATE NUMBER

W19

APPROVED:

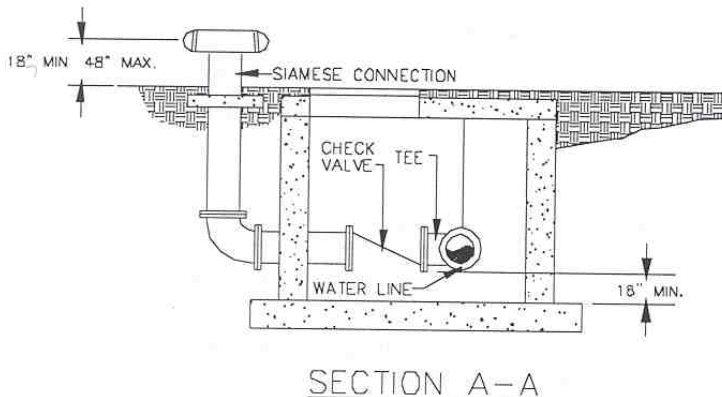
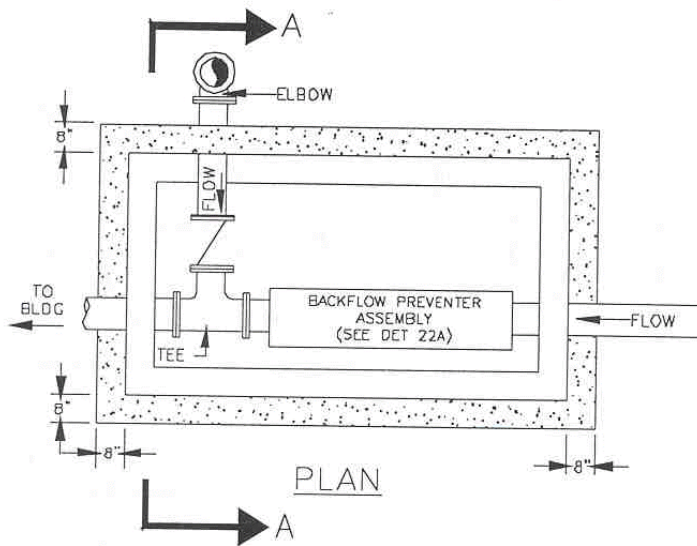
Henry Johnson
CITY ENGINEER

SCALE:

N.T.S.

DATED:

APRIL 1999



NOTES:

1. THE VALVE PIT SHALL BE SIZED TO ACCOMMODATE ALL PROPOSED EQUIPMENT.
2. THERE SHALL BE NO SHUTOFF VALVE IN THE FIRE SERVICE CONNECTION (PER NFPA 13)
3. ALL FITTINGS SHALL BE FLANGED.
4. ALL PIPING SHALL BE STEEL OR DUCTILE IRON
5. SEE SITE PLANS FOR SIZES OF PIPES AND FITTINGS. SIAMESE CONNECTION TO BE IN ACCORDANCE WITH NFPA 13.
6. PROVIDE DRAINAGE AWAY FROM STRUCTURE.

City of Savannah

STANDARD CONSTRUCTION DETAILS FIRE SERVICE SYSTEM FOR BUILDINGS



PLATE NUMBER

W20

APPROVED:

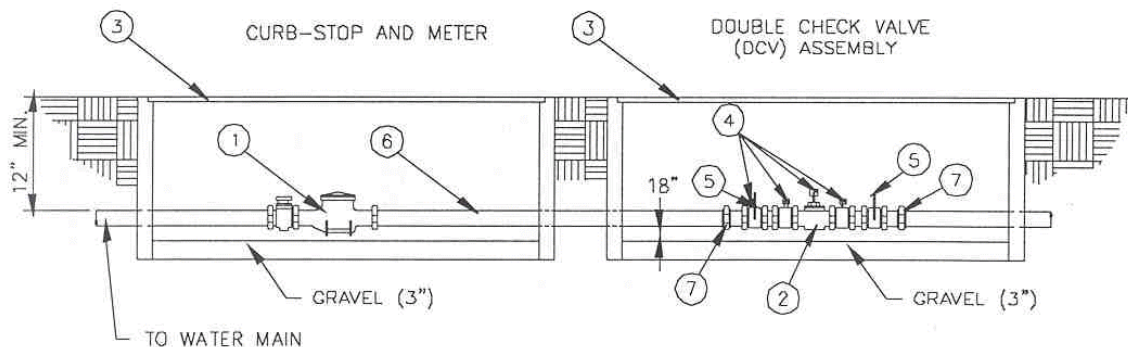
Henry D. Johnson
CITY ENGINEER

SCALE:

N.T.S.

DATED:

APRIL 1999



MATERIALS

ITEM	QUAN	DESCRIPTION
1	1	WATER METER
2	1	DOUBLE CHECK VALVE ASSEMBLY
3	2	METER BOX (JUMBO METER BOX FOR 3/4", 1", 1 1/4", 1 1/2" & 2" BFD ONLY)
4	4	TEST COCKS
5	2	FULL PORT BALL VALVES
6		SCH. 40-PVC, OR BRASS CUT TO LENGTH
7	2	UNION

INSTALLATION INSTRUCTIONS:

THE ASSEMBLY SHALL NOT BE BURIED IN EARTH, BUT MAY BE INSTALLED IN A UTILITY BOX ADJACENT TO OR AS CLOSE AS PRACTICAL TO, THE OUTLET SIDE OF THE METER. UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR SYSTEM CONTAINMENT.

NOTES:

1. NEW METER INSTALLATIONS 3/4", 1", 1 1/4" & 1 1/2" TO BE INSTALLED BY CITY OF SAVANNAH'S WATER DISTRIBUTION DEPARTMENT
2. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE. INSTALLER MUST PROVIDE FOR THERMAL EXPANSION WITHIN THE PROJECT

3. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTION DEVICE; UNDER NO CIRCUMSTANCE, SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL OUTSIDE INSTALLATION
(3/4", 1", 1 1/4" & 1 1/2" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

DOUBLE CHECK VALVE & METER ASSEMBLY
FOR DOMESTIC SERVICE FOR COMMERCIAL SITES



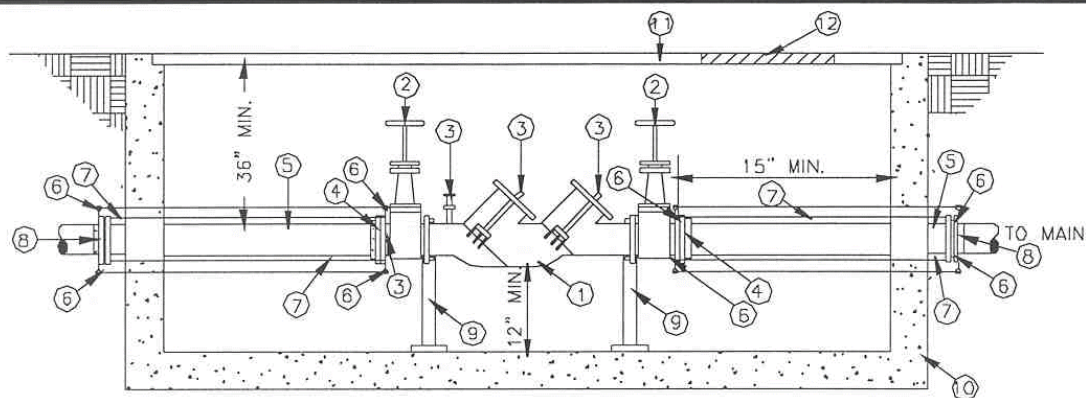
PLATE NUMBER:

APPROVED.

[Signature]
CITY ENGINEER

SCALE: N.T.S.
DATED: MARCH, 2001

W21



MATERIALS

ITEM	QUAN.	DESCRIPTION
1	1	DOUBLE CHECK VALVE ASSEMBLY
2	2	NON-RISING RESILIENT SEAT GATE VALVES
3	4	TEST COCKS
4	2	COMPANION FLANGE
5		DUCTILE IRON PIPE, CUT TO FIT
6	8	CARBON STEEL EYE BOLTS
7		3/4 GALV. ALL THREAD ROD
8		MEGA LUG OR EQUIVALENT FOR DUCTILE PIPE
9	2	2" SCH. 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
10		PIT-CEMENT BLOCK, POURED CONCRETE, OR PREFABRICATED BOX PER CITY SPECS.
11		3/8 ALUM. FLOOR PLATE / HATCH COVER W/FLUSH HANDLE
12		2' X 2' MIN. HATCH

NOTE:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE), UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTION DEVICE; UNDER NO CIRCUMSTANCE, SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL BELOW GRADE INSTALLATION (3", 4", 6", 8", & 10" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

DOUBLE CHECK VALVE ASSEMBLY
FOR DOMESTIC SYSTEM



PLATE NUMBER

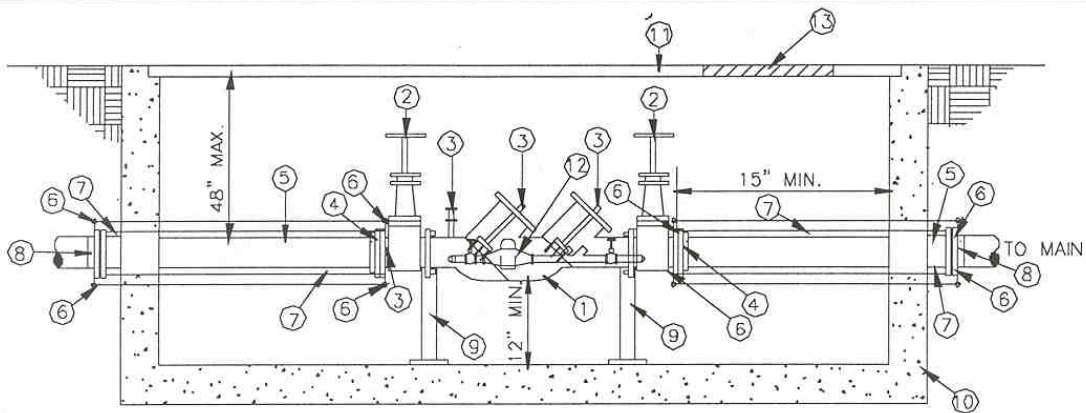
APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

W22



MATERIALS

ITEM	QUAN.	DESCRIPTION
1	1	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
2	2	OS&Y RESILIENT SEAT GATE VALVES
3	4	TEST COCKS
4	2	COMPANION FLANGE
5		DUCTILE IRON PIPE, CUT TO FIT
6	8	CARBON STEEL EYE BOLTS
7		3/4 GALV. ALL THREAD ROD
8		MEGA LUG OR EQUIVALENT FOR DUCTILE PIPE
9	2	2" SCH. 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
10		PIT-CEMENT BLOCK, POURED CONCRETE, OR PREFABRICATED BOX PER CITY SPECS.
11		3/8 ALUMINUM FLOOR PLATE / HATCH COVER
12	1	3/4 CUBIC FT. BYPASS METER
13		2' X 2' MIN. HATCH

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER; UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.
3. IF ADDITIONAL SIAMESE CONNECTION IS REQUIRED FOR FIRE SERVICE, SEE DETAIL W20.

TYPICAL BELOW GRADE INSTALLATION
(2", 3", 4", 6", 8", & 10" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

DOUBLE DETECTOR CHECK VALVE ASSEMBLY
FOR FIRE SYSTEM



PLATE NUMBER

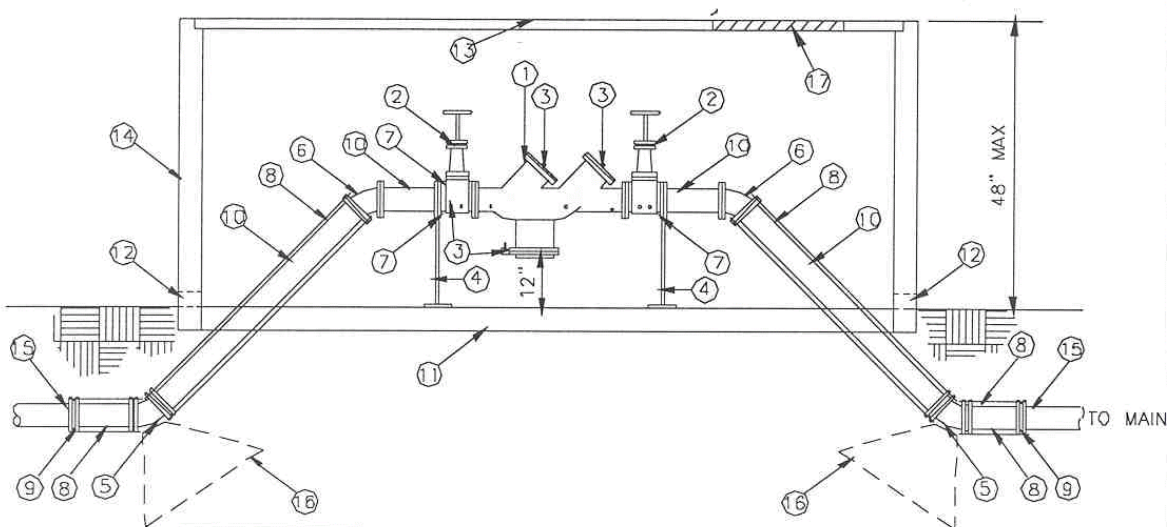
APPROVED:

Henry D. Amodeo
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

W22A



MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	1	REDUCED PRESSURE ZONE DEVICE
2	2	O.S. & Y RESILIENT GATE VALVES
3	4	TEST COCKS
4	2	2" SCH 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
5	2	MJ 45° BENDS
6	4	FLANGED 45° BENDS
7	2	COMPANION FLANGES
8	8	3/4" DIA. GALV. ALL THREAD ROD
9	16	CARBON STEEL EYE BOLTS
10		DUCTILE IRON PIPE, CUT TO FIT
11		4" PEA GRAVEL IN BOTTOM OF PIT OR CONCRETE SLAB
12	2	DRAIN PORTS, SIZE ACCORDING TO PIPE SIZE
13		3/8 ALUMINUM FLOOR PLATE / HATCH COVER
14		BOX-CEMENT BLOCK, POURED CONCRETE OR PREFABRICATED BOX PER CITY SPECS
15		C900 PVC PIPE
16	2	REACTION BLOCKS
17		2' X 2' MIN. HATCH

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.

2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL OUTSIDE INSTALLATION
(3", 4", 6", 8", & 10" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

REDUCED PRESSURE ZONE DEVICE
FOR DOMESTIC SYSTEM



PLATE NUMBER

APPROVED:

Henry Johnson
CITY ENGINEER

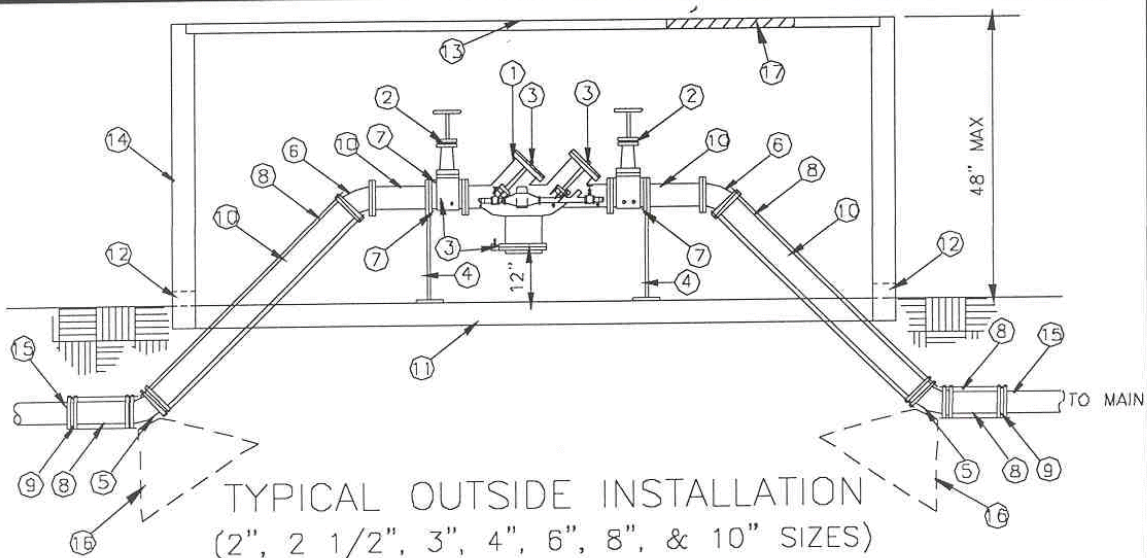
SCALE:

N.T.S.

DATED:

APRIL 1999

W23



MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	1	REDUCED PRESSURE ZONE DEVICE
2	2	O.S. & Y RESILIENT GATE VALVES
3	4	TEST COCKS
4	2	2" SCH 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
5	2	MJ 45° BENDS
6	4	FLANGED 45° BENDS
7	2	COMPANION FLANGES
8	8	3/4" DIA. GALV. ALL THREAD ROD
9	16	CARBON STEEL EYE BOLTS
10		DUCTILE IRON PIPE, CUT TO FIT
11		4" PEA GRAVEL IN BOTTOM OF PIT OR CONCRETE SLAB
12	2	DRAIN PORTS SIZE ACCORDING TO PIPE SIZE
13		3/8 ALUMINUM FLOOR PLATE / HATCH COVER
14		BOX-CEMENT BLOCK, POURED CONCRETE OR PREFABRICATED BOX PER CITY SPECS
15		C900 PVC PIPE
16	2	REACTION BLOCKS
17		2' X 2' MIN. HATCH

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.

2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

3. APPLICABLE TO TALL BUILDINGS OVER 2 STORIES AND ESTABLISHMENTS WITH HAZARDOUS CONTAMINATION.

City of Savannah

STANDARD CONSTRUCTION DETAILS

REDUCED PRESSURE DETECTOR ASSEMBLY FOR FIRE SYSTEM



PLATE NUMBER

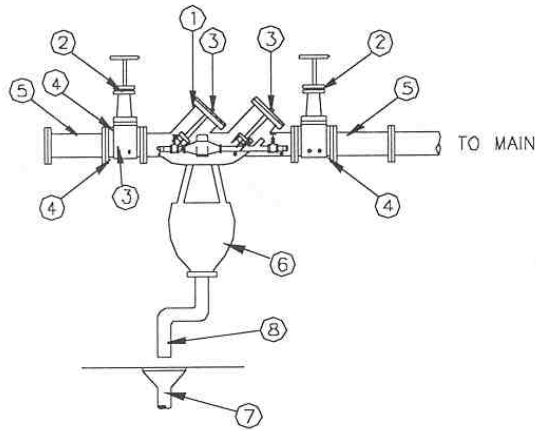
W23A

APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999



TYPICAL INSIDE INSTALLATION
(2", 2 1/2", 3", 4", 6", 8", & 10" SIZES)

MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	1	REDUCED PRESSURE ZONE DEVICE
2	2	O.S. & Y RESILIENT GATE VALVES
3	4	TEST COCKS
4	2	COMPANION FLANGES
5		DUCTILE IRON PIPE, CUT TO FIT
6	1	AIR GAP DRAIN
7	1	FLOOR DRAIN
8		DUCTILE IRON PIPE, CUT TO FIT

City of Savannah

STANDARD CONSTRUCTION DETAILS

REDUCED PRESSURE DETECTOR ASSEMBLY
FOR INSIDE FIRE SYSTEM



APPROVED:

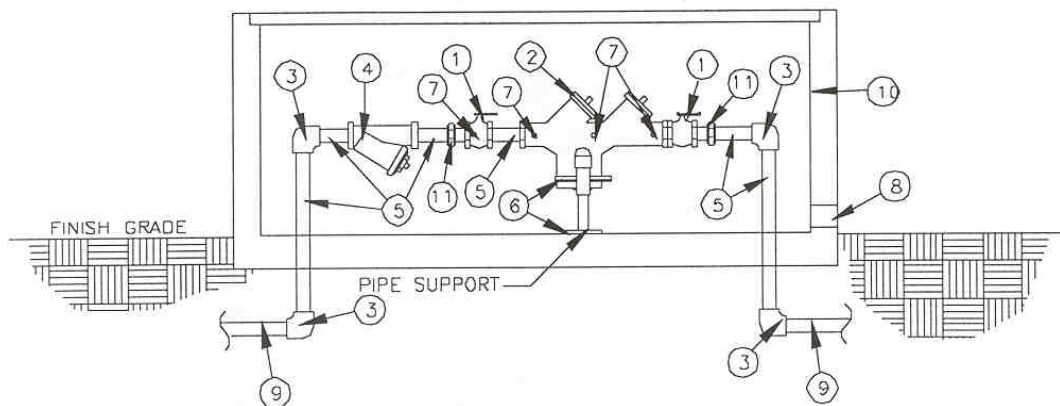
Henry D. Smith
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

PLATE NUMBER

W23B



MATERIALS		
ITEM	QUAN	DESCRIPTION
1	2	FULL PORT BALL VALVE
2	1	REDUCED PRESSURE ZONE DEVICE
3	4	BRASS ELLS THREADED OR FLANGED
4	1	STRAINER W/ RPZ DEVICE(OPTIONAL)
5	6	BRASS OR SHC 80 NIPPLES CUT TO LENGTH
6		PIPE STAND MIN.12"
7	4	BRASS PLUGS INSERTED IN TEST COCKS
8		2" X 2" DRAIN
9		SCH 80 PVC
10		ENCL. PER CITY SPECS FOR TYP. METER PIT
11	2	UNION

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.

2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL OUTSIDE INSTALLATION
REDUCED PRESSURE
TYPE BACKFLOW PREVENTION DEVICE
(3/4", 1", 1 1/2", 2", & 2 1/2" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER
FOR DOMESTIC SYSTEM



PLATE NUMBER

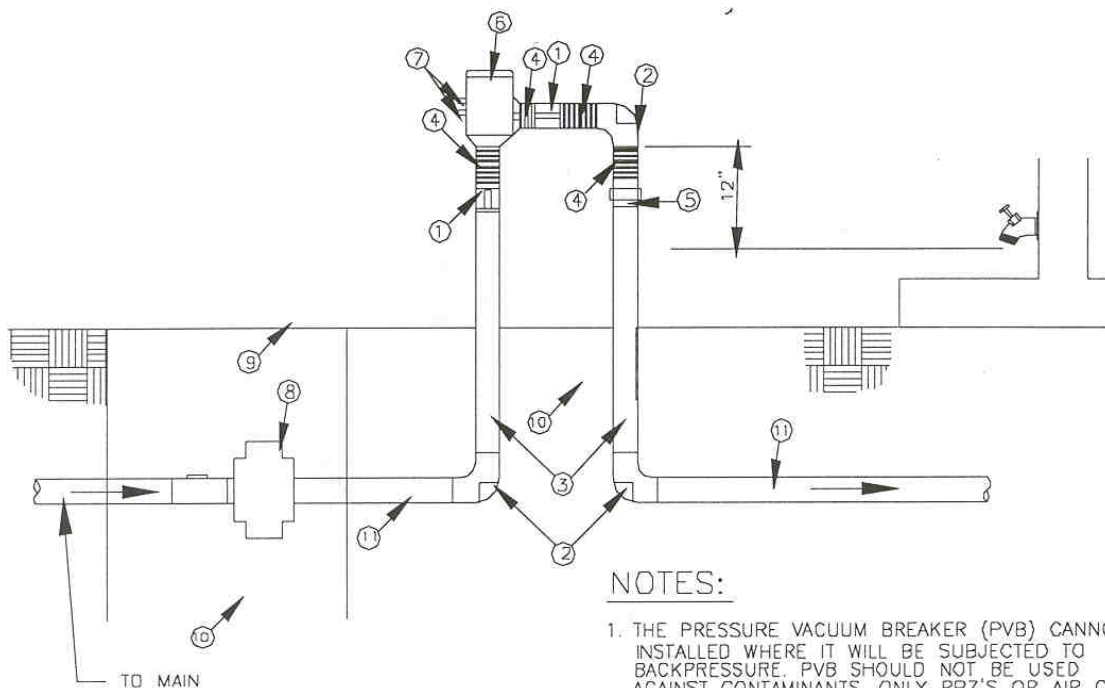
APPROVED:

Henry Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

W24



NOTES:

1. THE PRESSURE VACUUM BREAKER (PVB) CANNOT BE INSTALLED WHERE IT WILL BE SUBJECTED TO BACKPRESSURE. PVB SHOULD NOT BE USED AGAINST CONTAMINANTS. ONLY RPZ'S OR AIR GAPS.
2. EACH PVB SHALL BE INSTALLED IN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING.
3. EACH PVB SHALL BE INSTALLED ON THE LINE TO THE IRRIGATION SYSTEM AND AT LEAST 12 INCHES ABOVE THE HIGHEST SPRINKLER HEAD OR OUTLET. (VALVES MAY BE LOCATED DOWNSTREAM FROM THE DEVICE).
4. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
5. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

MATERIALS		
ITEM	QUAN	DESCRIPTION
1	2	BALL VALVE
2	3	BRASS OR SCH 40 ELBOWS
3		BRASS OR SCH 40 PIPE CUT TO LENGTH
4	4	CLOSE BRASS NIPPLES
5	1	BRASS UNION
6	1	PRESSURE VACUUM BREAKER
7	2	BRASS PLUGS INSERTED IN TEST COCKS
8	1	WATER METER
9	1	METER BOX
10		GRAVEL
11		SCH 40 PVC, OR BRASS PIPE CUT TO LENGTH

TYPICAL OUTSIDE INSTALLATION
PRESSURE VACUUM BREAKER
BACKFLOW PREVENTION DEVICE
(3/4", 1", 1 1/2", & 2" SIZES)

City of Savannah

STANDARD CONSTRUCTION DETAILS

PRESSURE VACUUM BREAKER BACKFLOW PREVENTER



PLATE NUMBER

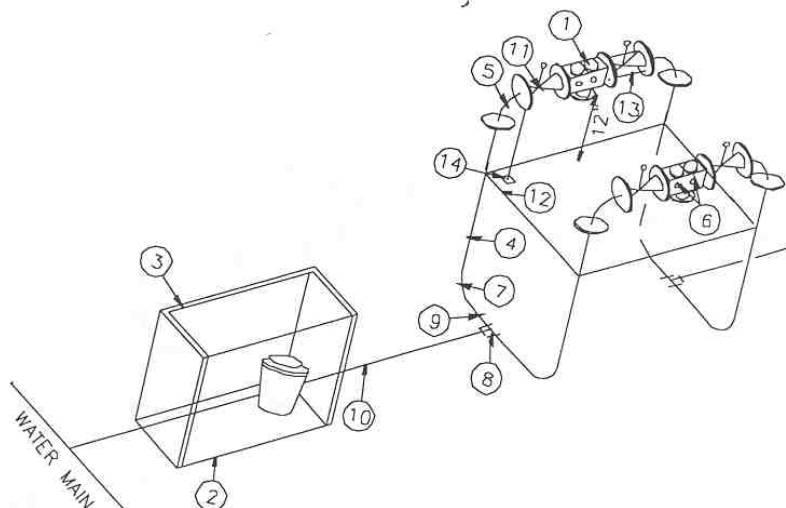
W25

APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999



MATERIALS					
ITEM	QUAN	DESCRIPTION	ITEM	QUAN	DESCRIPTION
1	2	REDUCED PRESSURE ZONE DEVICES	8	2	SCH 40 GALV. TEES CAST OR DUCTILE IRON TEE'S FOR 6" & ABOVE
2	1	WATER METER IN BOX (3/4" TO 1-1/2" SIZE)	9	4	GALV. STEEL NIPPLES CUT TO LENGTH CAST OR DUCTILE IRON FOR 6" & ABOVE
3	1	2" & LARGER METERS IN CITY SPEC'D PIT	10		SCH 80 PVC OR SCH 40 GALV. STEEL PIPE CAST OR DUCTILE IRON FOR 6" & ABOVE
4	4	GALVANIZED STEEL-CUT TO LENGTH. THIS ILLUSTRATION IS FOR 3/4-4" RPZ & DCA'S MIN. 12" ABOVE GRADE. CAST OR DUCTILE IRON PIPE FOR ANY INSTALLATION W/ 6" OR 8" RPZ & DCA	11	4	RESILIENT TYPE GATE VALVES
5	4	FLG OR THRD SCH 40 GALV. ELLS CAST OR DUCTILE IRON FOR 6" & ABOVE	12		CONCRETE SLAB.-12" MIN. FROM RPZ
6	8	BRASS PLUGS INSERTED IN TEST COCKS	13		RETAINING GLANDS & STEEL RODS REQUIRED AS DIRECTED BY THE WATER DEPARTMENT
7	4	SCH 40 GALV. ELLS CAST OR DUCTILE IRON FOR 6" & ABOVE	14		PIPE SUPPORT FOR ALL ASSEMBLIES AS DIRECTED BY THE WATER DEPARTMENT

NOTES:

FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE) UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.

2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER; UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL OUTSIDE INSTALLATION
REDUCED PRESSURE TYPE
BACKFLOW PREVENTION DEVICE
PARALLEL SERVICE (MANIFOLD)

City of Savannah

STANDARD CONSTRUCTION DETAILS

REDUCED PRESSURE ZONE (RPZ) TYPE BACKFLOW PREVENTER

APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1994



PLATE NUMBER

W26



MATERIALS		
ITEM	QUAN	DESCRIPTION
1	1	3/4 CUBIC FT. BYPASS METER
2	1	DOUBLE CHECK VALVE ASSEMBLY
3	1	DOUBLE DETECTOR CHECK
4	2	OS&Y RESILIENT SEAT GATE VALVES
5	1	MJ DUCTILE IRON BEND
6	1	PIPE STAND W/ 12" X 12" BASE PLATE
7	2	DUCTILE IRON PIPE CUT TO LENGTH
8	1	FLANGED BEND
9	4	RESTRAINT ROD
10	4	COMPANION FLANGE
11		THRUST BLOCKING
12	4	BRASS PLUGS INSERTED IN TEST COCKS
13		C900 PVC PIPE

NOTES:

1. RISER COMING THRU THE FLOOR SHALL BE 12 INCHES PLUS 3 TIMES THE DIAMETER OF THE PIPE AWAY FROM NEAREST WALL. ALL UNDERGROUND PIPING WILL BE RODDED & THRUST PROTECTED. ALLOWANCES WILL BE MADE FOR THE EXPANSION OF THE CONCRETE AROUND THE RISER.
2. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE) UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
3. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.
4. SIAMESE CONNECTION SHALL BE INSTALLED DOWNSTREAM OF THE BACKFLOW PREVENTION DEVICE.

TYPICAL INDOOR DOUBLE DETECTOR CHECK VALVE
(2", 3", 4", 6", 8" & 10")

City of Savannah



STANDARD CONSTRUCTION DETAILS

DOUBLE DETECTOR CHECK VALVE FOR FIRE SYSTEM

APPROVED:

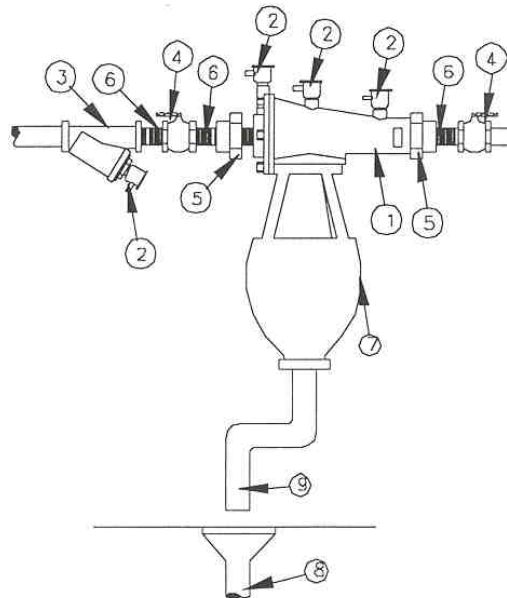
Henry Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

PLATE NUMBER

W27



MATERIALS		
ITEM	QUAN	DESCRIPTION
1	1	RPZ DEVICE - 3/4" TO 3" SIZE (SEE NO. 10)
2	4	BRASS PLUGS IN TEST COCKS
3	1	STRAINER
4	2	BALL VALVES
5	2	UNIONS
6	3	BRASS NIPPLES (USE ONLY TEFLON TAPE)
7	1	AIR GAP DRAIN
8	1	FLOOR DRAIN
9		DRAIN LINE CUT TO LENGTH
10		FOR ANY INSTALLATION 4" & LARGER ONLY CAST OR DUCTILE FITTINGS ARE ALLOWED RESTRAINING DEVICES, PIPE SUPPORTS & VALVES AS SPECIFIED BY THE WATER DEPARTMENT

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.

2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL INDOOR REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION

City of Savannah



STANDARD CONSTRUCTION DETAILS

REDUCED PRESS. BACKFLOW PREVENTER

APPROVED:

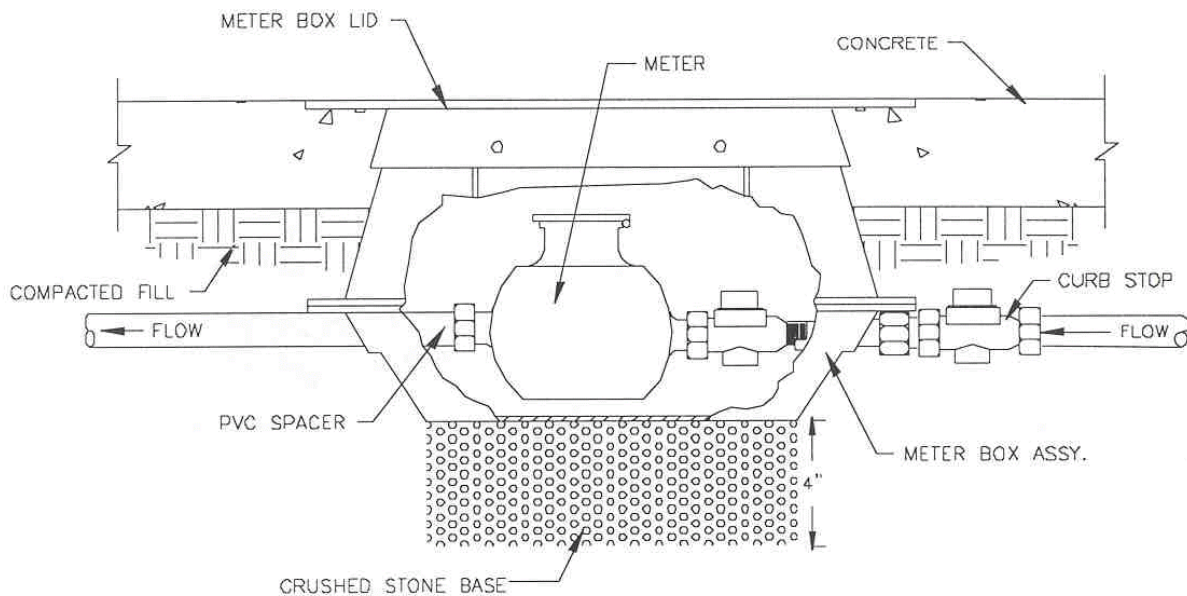
Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

PLATE NUMBER

W28



METER BOX INSTALLATION IN CONCRETE

NOTES:

1. CONCRETE SHALL BE CAST FLUSH WITH TOP OF LID.
2. DETAIL APPLICABLE TO EXIST. RESIDENCES ONLY.

City of Savannah

STANDARD CONSTRUCTION DETAILS WATER METER W/O BACKFLOW PREV.



PLATE NUMBER

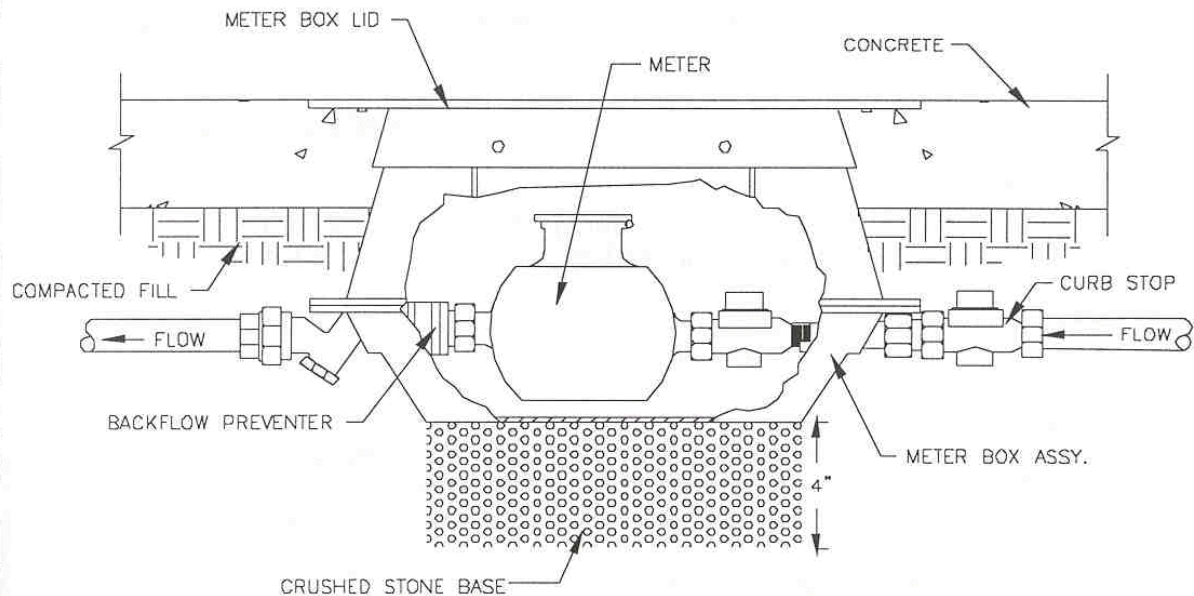
W29

APPROVED:

Henry D. Johnson
CIVIL ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999



METER BOX INSTALLATION IN CONCRETE

NOTES:

1. CONCRETE SHALL BE CAST FLUSH WITH TOP OF LID.
2. DETAIL APPLICABLE TO NEW RESIDENCES ONLY.

City of Savannah

STANDARD CONSTRUCTION DETAILS

WATER METER W/BACKFLOW PREVENTER



PLATE NUMBER

W30

APPROVED:

Henry D. Johnson
CITY ENGINEER

SCALE: N.T.S.

DATED: APRIL 1999

CROSS CONNECTION CONTROL OF THE CITY OF SAVANNAH

STEPS FOR GAINING APPROVAL OF A NEW OR EXISTING SERVICE BACKFLOW PREVENTION ASSEMBLY

I. INSTALLATIONS

1. City of Savannah(COS) provides customer with a Cross Connection Control (CCC) Backflow Information Sheet and Questionnaire.
2. Customer and/or plumber completes CCC Backflow Prevention Questionnaire, pages A5 and A6, and returns it to Cross Connection Control Department.
3. Cross Connection Control Department determines if Backflow Prevention Assembly is required and notifies customer in writing the type of Backflow Preventer required.
4. If Backflow Preventer is required, use List of Approved Backflow Prevention Assemblies.
5. Have an approved Backflow Preventer installed to meet all requirements. Installation must be completed prior to water service being activated.
6. Installer notifies Cross Connection Control Inspector of the installation of a Backflow Preventer and schedules an inspection by calling (912) 651-3670 or (912) 651-6584. Installer shall make notification within two (2) days and shall complete pages A7 and A8 of questionnaire.
7. If the assembly does not meet requirements, corrections must be made prior to activating the water service.

II. BACKFLOW PREVENTER TEST:

1. Test the Backflow Preventer, using a tester only from List of Certified Backflow Prevention Assembly Testers.
2. Have a plumber or the installer make any necessary repairs or corrections to the Backflow Preventer to meet all requirements.

3. Approved Backflow Prevention Assembly tester must return test report to Cross Connection Control Department within seven (7) days of testing in order to conform to all requirements. This will place the service in compliance for a period of one (1) year.

III. TESTING

1. Following Installation

Backflow Prevention Assemblies must be tested by a certified tester immediately after installation and a minimum of once each subsequent year. CCC reserves the right to require more frequent testing depending upon the degree of hazard.

2. Certified Tester

Backflow Prevention Assemblies protecting the City of Savannah's distribution system shall be tested only by those certified testers whose names appear on the LIST OF CERTIFIED BACKFLOW PREVENTION ASSEMBLY TESTERS.

3. Test Results

A copy of the PASSING OR FAILING test result must be received (mailed hand carried, or faxed) by COS within seven (7) days after testing. The tester shall provide a copy to the customer.

4. Backflow Preventer Follow-Up Testing

Personnel will conduct random follow-up testing of Backflow Prevention assemblies to ensure proper operation. The customer will be given advance notification of testing. COS personnel may perform follow-up testing at any time and for any reason to ensure water quality and system protection.

5. Backflow Preventer Repairs

City of Savannah requires all Backflow Prevention Assemblies to be tested after ANY REPAIR is made to the assembly. The test results must be received by COS within seven (7) days after testing.

IV. REQUIREMENTS FOR EXISTING SERVICE

1. Existing Backflow Prevention Assemblies Found to be in Non-Compliance

All presently installed approved Backflow Prevention Assemblies which do not meet the current requirements of this section, but were approved or accepted at the time of original installation and which have been properly maintained, shall be excluded from the requirements of these rules so long as is assured that the Backflow Preventer will adequately protect its water system. Whenever an existing assembly malfunctions, or fails to pass the annual, periodic, or random test, and it becomes necessary to replace the entire assembly, it must be replaced and installed in a manner consistent with the current Cross-Connection Control Program Manual requirements in effect at the time. Routine check valve/relief valve or gate/ball valve/seat repairs or replacement will not require the assembly to be re-piped or brought above ground. However, whenever the existing assembly is moved from the present location, or when CCC finds that the assembly, for whatever reason, no longer ensures adequate protection for the actual or potential degree of hazard present, and the assembly is scheduled for replacement, it shall be replaced by an approved Backflow Prevention Assembly meeting current COS Cross-Connection Control Department requirements.

2. Change-out (Retro-fit)

All plumbers, contractors, and installers must notify the Cross-Connection Control Department whenever they change-out a Backflow Preventer. This notification must be made within two (2) days and shall include the make, model, size, serial number and physical location of the New Backflow Preventer. IT MUST ALSO BE TESTED AFTER THE Change-out. Cross-Connection control Department Personnel will then inspect the change-out for conformance and to record/verify the Backflow Preventer's make, model, size, serial number and physical location. COS will make an inspection within two (2) days.

3. Compliance on Existing Backflow Prevention Assemblies

A Backflow Prevention Assembly required by COS on any existing water service must be installed within thirty (30) days from date of written notification. Failure to comply may result in the water service being disconnected. HIGH HAZARDS MAY REQUIRE A MORE TIMELY INSTALLATION.

4. Compliance on Existing Backflow Prevention Assemblies

Existing Backflow Prevention Assemblies are required to be tested annually as outlined under Test Requirements, and if replacement is necessary, BROUGHT TO CURRENT INSTALLATION STANDARDS.

V. OTHER REQUIREMENTS

1. By-Pass Piping

By-Pass piping is not permitted unless it is equipped with an approved Backflow Prevention Assembly of the same class as the main line assembly. In some instances it may be desirable or necessary to install two (2) approved Backflow Preventers in order not to interrupt water service.

2. Vertical Installation

CCC does not allow vertical installation of Backflow Prevention Assemblies unless they have been evaluated and approved by the University of Southern California(USC) for a vertical orientation. USC has evaluated the installation of backflow prevention assemblies in the vertical position and approved several assemblies at this time. Please call for current USC vertical Installation approvals.

3. Fire Protection Systems

All fire protection systems shall be contained from the public water system by the installation of an approved double detector check assembly.

I hereby certify that all information furnished is complete and correct. I further acknowledge that incomplete or incorrect information may result in an additional or different requirement insofar as Backflow Prevention Assemblies at the water service connection are concerned.

Signature of Applicant: _____

Date: _____ Telephone Number: _____

CUSTOMER NOTICE

In order that we may accurately determine the proper, if any, Backflow Prevention Assembly required for your service, please complete this form and return it to the Cross-Connection Control Department at your earliest possible convenience. Failure to comply will result in a delay in the installation of your water service.

CCC USE ONLY

_____ Inch Air Gap
_____ Inch Reduced Pressure Principle Assembly
_____ Inch Double Check Valve Assembly
_____ No Backflow Preventer Required

CCC Reviewer's Signature: _____ Date: _____

Additional notes: _____

CROSS CONNECTION CONTROL
P.O. Box 1027, Savannah, GA 31402
(912)651-6584 (912)651-3670
Fax (912)651-6808

CITY OF SAVANNAH
CROSS-CONNECTION CONTROL QUESTIONNAIRE

Date: _____ Account Number: _____

Applicant: _____

Service Address: _____

Proposed Account or Business Name: _____

Service Type (Check One): Duplex/Apartment Complex____ Commercial____

Irrigation____

Govt. or School____ Industrial____ Temporary Building/Construction ____

Other _____

YARD SPRINKLER

Yes____ No____ Outside Faucet Only: Yes____ No____

Type of Heads: Pop-up____ Shrub____ Soaker____ Other____ (Will your irrigation system be designed to add fertilizer, weed control, or other additives by using pressure, injection, or aspiration methods either manually or automatically?)

Yes____ No____

COMMERCIAL

Type of Business: Medical, Restaurant,, Catering, Video Rental/Sales, Clothing, Office, Industrial, Gas Station, Laundromat, Dry cleaners, Sweet shop, Other: (Please Define Business:) _____

Water Used For: Cooking/Drinking____ Sanitary____ Processing____ Boilers____ Chillers____ Cooling Tower____ Equipment____ Other____ (Are corrosion Inhibitors, Chemical Treatments or Other Additives Used in Processing, Boilers, Chillers or Cooling towers?) Yes____ No____ Auxiliary Water Storage: Yes____ No____ Swimming Pool, Hot tub or Spa: Yes____ No____

FIRE SERVICE

Yes____ No____

Type system: Dry sprinkler____ Wet Sprinkler____ Dry Riser____ Wet Riser____ Hose Cabinets____ Supply by Hydrant or Pumper Truck Only____ Foaming Agents: Yes____

No____ Anti-Freeze Agents: Yes____ No____ Auxiliary Water Storage: Yes____ No____

Fire or Jacky Pump used: Yes____ No____

Additional Information _____

CITY OF SAVANNAH, GEORGIA

APPROVAL PLAN AND SPECIFICATIONS FOR THE INSTALLATION
OF BACKFLOW PREVENTERS

NAME OF PREMISE_____

STREET ADDRESS _____

LOCATION OF DEVICE_____

TYPE OF DEVICE: RPZ_____ DCA_____ DCDA_____ PVB_____

MANUFACTURER _____SIZE_____

MODEL NUMBER_____ SERIAL NUMBER_____

SHOW LOCATION OF DEVICE IN SPACE BELOW

NOTE: DEVICE MUST BE CERTIFIED UPON INSTALLATION

COMMENTS_____

SUBMITTED BY_____

DATE_____



City of Savannah, Georgia

CITY CODE: _____

TEST B MAINTENANCE REPORT CROSS CONNECTION CONTROL DEVICES

Line psi: _____

CUSTOMER: _____

STREET ADDRESS: _____

MAILING ADDRESS: _____

LOCATION OF ASSEMBLY: _____

TYPE OF ASSEMBLY: RP ☐ DC ☐ PVB ☐ SIZE: _____

MANUFACTURER: _____ MODEL: _____ SERIAL #: _____

TEST GAUGE MFG: _____ GAUGE SERIAL #: _____

CHECK VALVE #1	RELIEF VALVE	CHECK VALVE #2	PRESSURE VACUUM BREAKER
<input type="checkbox"/> leaked <input type="checkbox"/> closed tight gauge pressure across check valve _____ psi	Opened at: _____ psi <input type="checkbox"/> did not open	<input type="checkbox"/> leaked <input type="checkbox"/> closed tight gauge pressure across check valve _____ psi	Air inlet opened at _____ psi Check Valve: <input type="checkbox"/> leaked Held at _____ psi
<input type="checkbox"/> cleaned only Replaced: <input type="checkbox"/> Rubber Kit <input type="checkbox"/> CV Assembly OR <input type="checkbox"/> Disc <input type="checkbox"/> O-rings <input type="checkbox"/> Seat <input type="checkbox"/> Spring <input type="checkbox"/> Stem/Guide <input type="checkbox"/> Retainer <input type="checkbox"/> Lock Nuts <input type="checkbox"/> Other	<input type="checkbox"/> cleaned only Replaced: <input type="checkbox"/> Rubber Kit <input type="checkbox"/> RV Assembly OR <input type="checkbox"/> Disc <input type="checkbox"/> Diaphragm(s) <input type="checkbox"/> Seat <input type="checkbox"/> Spring <input type="checkbox"/> Guide <input type="checkbox"/> O-rings <input type="checkbox"/> Other	<input type="checkbox"/> cleaned only Replaced: <input type="checkbox"/> Rubber Kit <input type="checkbox"/> CV Assembly OR <input type="checkbox"/> Disc <input type="checkbox"/> O-rings <input type="checkbox"/> Seat <input type="checkbox"/> Spring <input type="checkbox"/> Stem/Guide <input type="checkbox"/> Retainer <input type="checkbox"/> Lock Nuts <input type="checkbox"/> Other	<input type="checkbox"/> Cleaned Only Replaced: <input type="checkbox"/> Rubber Kit <input type="checkbox"/> CV Assembly <input type="checkbox"/> Disc, Air In <input type="checkbox"/> Disc, CV <input type="checkbox"/> Spring, Air <input type="checkbox"/> Spring, CV <input type="checkbox"/> Retainer <input type="checkbox"/> Guide <input type="checkbox"/> O-ring <input type="checkbox"/> Other
Gauge Pressure across check valve _____ psi	Relief Valve opened at _____ psi	Gauge Pressure across check valve _____ psi	Air Inlet _____ psi Check Valve _____ psi

NOTE: ALL REPAIRS MUST BE COMPLETED WITHIN TEN (10) DAYS.

COMMENTS: _____ I HEREBY

CERTIFY THAT THE ABOVE DATA IS ACCURATE TO THE BEST OF MY KNOWLEDGE AND REFLECTS THE PROPER OPERATION AND MAINTENANCE OF THE ASSEMBLY.

TESTER: _____ CERT. #: _____ DATE: _____
TIME: _____